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CONGESTIVE HEART FAILURE

Adaptation of the Body to Inadequate Cardiac Output

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Until early in the nineteenth century physicians considered dropsy as a disease in itself, much as our generation deals with hypertensive cardiovascular disease. When renal, cardiac and hepatic diseases were defined, edema became merely a symptom. Starling pointed out that rise in venous pressure or fall in plasma protein would have similar effects in shifting fluid from the blood stream to the tissue spaces, and for several decades this explanation seemed to cover all cases of dropsy. High venous pressure was thought to underly the dyspnea, the proteinuria and the hepatic changes characteristic of heart failure. MacKenzie and Lewis were almost alone in their assumption that when the heart muscle failed the body would not receive its usual blood supply and that fatigue and dyspnea were due to anoxic metabolism. This view was given emphasis in Altschule's critical study [1] of heart failure. There the lack of correlation between symptoms and the elevation of venous pressure was noted.

In 1941 Borst, of Amsterdam, the Netherlands, in reporting the electrolyte retention which follows gastric hemorrhage, pointed out that in all forms of dropsy there were circulatory disturbances similar to those in hemorrhage, shock or dehydration.[2] He concluded that salt and water retention were secondary to inadequate cardiac output and that excretion of urine with a low sodium content in patients with congestive heart failure was one of the essential proofs that failure to maintain the proper output was present in this condition. This work was not known to Stead and his colleagues when they developed the view that cardiac edema was due to reduced volume of glomerular filtrate and was reflexly brought about by an inadequate blood supply to the tissues.[3] The existence of such a reflex mechanism had been proved by the classic studies of Homer Smith on renal blood flow.[4] Such a mechanism also operates in hypoproteinemia, and along with it increased desoxycorticosterone action as shown by reduction in electrolyte content of the sweat as well as of the urine.[5] The salt content of sweat and urine both return to normal, as does the glomerular filtrate, when the blood volume is restored by injecting human albumin.

Hemorrhage and shock reduce cardiac output by diminishing the venous return. In heart failure, venous return is ample but the work done by the heart is not adequate to meet the needs of the body. Disease of the pericardium may embarrass diastolic filling of the heart, and disease of the myocardium may diminish effectiveness of systolic discharge. If either develops rapidly in a person otherwise normal, the minute volume flow of blood under basal conditions will be reduced, and signs and symptoms like those of shock may be recognized. If it occurs gradually in a person who has metabolic or other causes for high basal cardiac output, the actual basal output may be normal or high, and in the latter case pulse pressure, heart sounds and impulses also will be increased. As in the case of other systems, the indications of failure do not depend on the absolute amount of work the organ or system is doing, but on the ratio of work done to that necessary for homeostasis, for maintaining a normal internal environment under existing stresses. The cardiac output adequate for a starving man at rest would be wholly inadequate for a Peruvian miner carrying a pack up a ladder 17,000 feet above sea level.

ADAPTATION TO CIRCULATORY FAILURE

When the cardiac output drops rapidly from an adequate to an inadequate level, whether because of shock, hemorrhage, pericardial tamponade, extreme tachycardia, acute myocardial failure or acute obstruction to systolic emptying, the symptoms are the same. Loss of consciousness, particularly if erect or sitting; pallor, cold sweat, nausea, weakness and anuria are common to all these conditions, and death may occur suddenly. Gasping respiration is not uncommon. Systemic venous pressure may be within the normal range, or low in shock or slightly or moderately elevated in acute forms of cardiac disease. Diastolic arterial pressure may be low or normal, or even elevated, if the patient was hypertensive previously. The patient may feel well and even appear well if lying still, but

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he becomes critically ill and has a drop in diastolic pressure, or he may even die, if exercise or the erect posture is attempted. Because the indications of acute cardiac failure and of shock are identical, and the venous pressure in either may be in the normal range, the differentiation often must be made on collateral evidence. This may be misleading, as when a patient being treated for peptic ulcer goes into shock and is assumed to be having internal hemorrhage but is later proved to have had a painless myocardial infarct. It is well to bear in mind that management must often begin without knowledge of the nature of the underlying condition, and that a confidently held diagnosis may prove erroneous in a case of acute circulatory collapse.

When shock or acute failure subsides into a subacute state, with the patient comfortable at rest but easily made dyspneic or giddy on effort, it is possible to demonstrate that a number of compensatory mechanisms are at work. After hemorrhage, hematic dilution and new formation of blood are striking; in heart failure, increase in the heart volume usually is demonstrable together with a rise in venous pressure and in total blood volume. In all these conditions the percentage decrease in renal blood flow is much greater than in cardiac output,[6] and the urine is scanty, highly concentrated but poor in sodium chloride. In all such patients splanchnic blood flow is decreased and hepatic venous oxygen tension is low.[7] These changes are observed in heart failure even when the basal cardiac output is high because of anemia or other causes. Another change common to all, but most striking in heart failure with severe anemia, is a rise in venomotor tone, shifting blood into the large veins and raising central venous pressure even when the total blood volume is low. Venomotor tone is controlled by the nervous system, and the high venous pressure in chronic heart failure falls promptly on the injection of sympathicolytic agents such as tetraethyl ammonium chloride.[8] The change peculiar to myocardial failure is an increase in ventricular volume (dilatation of the heart) and later, if the disorder persists for weeks or months, hypertrophy of the heart and great veins. Decrease in renal and splanchnic blood flow, rise in vasomotor tone, sodium and water retention and rise in blood volume—these adaptations occur in hemorrhage, acute or subacute shock, and in all types of heart failure, acute or chronic.

In the earlier stages of progressive myocardial failure patients show few or none of the signs and symptoms of acute circulatory collapse. They do have weakness or fatigability and have dyspnea on effort or after going to sleep in the recumbent position. Some of those who are dyspneic at night have excellent capacity for physical effort by day. Few persons with chronic cardiac disease are giddy in the erect position, because real discrepancy between cardiac output and the circulatory demands of the body occurs only in the severe or terminal phases of chronic or recurrent heart failure, whether due to pericardial or myocardial disease. Both these latter types are alike in signs and symptoms and can be distinguished only by careful study of the heart itself.

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CARDIAC BURDEN: EXTRINSIC FACTORS IN HEART FAILURE

Myocardial failure is due to myocardial fatigue and loss of efficiency, but it usually is seen associated with conditions which elevate the basal level of mechanical work performed by the ventricles. However, myocarditis, coronary insufficiency or infiltration by amyloid or glycogen may so impair the heart muscle that it fails to meet basal demands which are even less than normal. The burdens to be considered are (1) increase in rate, with shortening of the period of recovery, (2) increase in resistance to systolic ejection and (3) increase in stroke volume of blood being moved.

1. Increase in rate is usually observed in heart failure. It often is due to systemic infection, toxemia or other conditions which are in themselves bad for the heart. But in emotional tachycardias without hypertension, and in acute ectopic cardiac arrhythmias, occasion is afforded for observing how myocardial failure may be precipitated by accelerated rate alone. Many illnesses which confine patients to bed are followed by postural tachycardia which lasts for weeks or months. In such cases cardiac insufficiency may develop not during the acute illness but during convalescence. This is not uncommon after myocardial infarction and is one of the phenomena which has led some physicians to urge early assumption of the sitting posture and walking short distances on the level after recovery from the initial episode. A faster rate increases fuel and oxygen needs of the heart per minute, at constant levels of work. It shortens time available for recovery. As metabolic processes become slower with advancing age, heart failure is seen more often with any given degree of acceleration and after relatively short periods of acceleration. At ages under 25, cardiac insufficiency may not occur for days with an ectopic rhythm causing a rate of 200 or more; after the age of 50, failure is not uncommonly evident after a day or even a few hours with rates over 150.

2. Elevated systemic pressures up to twice the normal level and elevated pulmonic pressures up to four times the normal level, when developed slowly over months or years, are tolerated by the heart without evidence of dilatation or failure in the majority of instances. This is also true of aortic and pulmonic stenosis. Nevertheless, when hypertension develops rapidly or when it has been present for years or decades, dilatation and failure occur far oftener than with normal pressures. In mitral stenosis, auricular and pulmonary venous pressure rises on the left side first, pulmonary arterial pressure rising as a result of changes in the lungs. When failure occurs, right-sided dilatation with a rise in systemic venous pressure is often more striking than evidence of further rise in pulmonic venous pressure. In these cases pulmonic hypertension is of paramount importance as the burden which precipitates failure.

3. Elevated stroke volume is well tolerated for months or decades when it occurs in young persons and develops gradually. It may be present in fever, exophthalmic goiter, anemia, pregnancy, osteitis deformans and arteriovenous fistulas. It is seldom the only circulatory burden present when failure sets in, for in almost all cases acceleration of the heart rate is present, along with the increased volume flow. Because of rapid rate, stroke volume infrequently is significantly elevated in

heart failure except in the cases of valvular insufficiency or complete block. In all the aforementioned conditions the ventricle empties against low resistance, and the increase in burden on the muscle is not proportional to rise in the stroke volume. It must be remembered that the normal increase in stroke volume, occurring in exercise, is due to peripheral vasodilatation, with fall in diastolic pressure and arterial resistance. The great increase in minute volume of athletes under maximal stress occurs with no increase, and often an actual decrease, in heart volume. This is interpreted as meaning that myocardial effort per beat is not increased. Ventricular emptying is performed efficiently and ventricular diastolic and venous pressures are low. Even pulmonic resistance decreases during exercise, and right ventricular dilatation is not seen in the hearts of trained men doing maximal work, with pulmonary blood flow per minute five to eight times the basic rate. Yet in such men, the heart increases in size with the rise in output and arterial pressure which occurs for a short time on resumption of normal breathing after straining to expire against a closed glottis. We may conclude that the Valsalva experiment imposes greater burdens, of brief duration, than does moderate or even vigorous exercise, and that rise in diastolic pressure imposes a far greater burden on the heart than does a rise in stroke volume due to peripheral vasodilatation.

In summary, accelerated rate is usually present when the heart fails, elevated arterial resistance often is present, elevated stroke volume seldom. Rise in stroke volume due to increased need of the tissues for blood causes no great burden to the normal heart or that in early failure; rise in resistance to systolic emptying is well tolerated but does burden the heart; accelerated rate causes a proportional rise in cardiac metabolism and shortens the recovery period. In patients under 25 years of age, myocardial inflammation or infiltration is the usual cause of heart failure; in those over 35 years of age such a complication is present in less than half the cases, while abnormal burdens on the heart are commonly present. Some of these burdens can be reduced by treatment, and this may alleviate or entirely remove the signs and symptoms of heart failure. Failure to seek out such corrigible burdens is a cardinal sin for a physician.

When myocardial failure begins to develop, it necessarily results in decrease in efficiency of systolic emptying. Failure to empty is the cause of dilatation and of a rise in diastolic pressure within the ventricle. Even in severe cardiac insufficiency, ventricular filling takes place chiefly in the first half of diastole and auricular and ventricular pressures are approximately the same through the last half or two thirds of diastole. Thus the venous pressure is simply a reflexion of the diastolic pressure in the right ventricle. While rise in venous pressure and ventricular filling do augment systolic discharge, this usually falls below the requirements of the tissues for blood in all patients with symptoms of cardiac insufficiency. To maintain arterial pressure, vasoconstriction in various regions occurs and blood is shunted to the brain and the heart. While it is feasible to measure cardiac output and the fractions going to various regions, this is not necessary for clinical purposes. Useful clues to the degree of fall in the ratio of actual cardiac output to optimal cardiac output are given by the liver and the kidneys.

EFFECTS OF LOW OUTPUT ON LIVER AND KIDNEYS

Using aromatic acid excretion and polysaccharide excretion as measures of renal blood flow and glomerular filtrate formation, it was shown by early students that the erect posture and exercise reduced renal flow and filtration, the latter falling much less than the former.[4] Later studies disclosed that violent exertion may reduce urine formation to zero for some minutes and be followed by oliguria and proteinuria. In shock, exercise and heart failure, reduction in renal blood flow, in urine formation and in sodium excretion are useful indexes of the decrease in adequacy of cardiac output. Rate of edema formation depends largely on the fall in ratio of excreted sodium to sodium ingested or injected, although when sodium ingested is low and excretion is forced by mercurial diuretics, water retention may exceed sodium retention, and the sodium content of blood and edema fluid may be lower than normal. In the patient with evidence of chronic cardiac disease, proteinuria which is not explained by a specific renal lesion and retention of administered salt may be taken as evidence of a definite fall in the ratio of actual to optimal cardiac output. Accurate measurements of renal blood flow and of cardiac output permit investigators to give some precision to the calculation of this ratio. When cardiac output is normal or high but renal filtrate or blood flow is reduced, either the kidney is the seat of local disease or optimal output must be extremely high.

Because renal metabolism, unique in this respect, declines with renal blood flow, no renal injury is sustained in shock of cardiac insufficiency unless the output of the heart is less than one-fifth optimal for many consecutive hours. The liver, however, does not reduce its metabolism when its blood supply is reduced. The cells at the centers of the lobules, where blood enters the radicles of the hepatic veins, are exposed to the lowest oxygen tensions and are the first to suffer when cardiac output becomes inadequate. But in shock the whole liver may be anoxic, and irreversible shock is associated with severe hepatic damage. When there are brief intermittent episodes of heart failure, hepatic cellular damage at the centers of lobules is repaired between bouts of failure and there are no signs of hepatic injury.

In chronic failure the central part of the lobe atrophies, and the lobule becomes a wall of parenchyma around a venous lake, which varies in size with the severity and duration of cardiac insufficiency. Fatty degeneration and interstitial edema affect even the periphery of the lobules when cardiac output is inadequate. This results in increased bulk and tenderness of the liver. In some instances aching pain may arise in the swollen liver. Thus, the state of the liver becomes another clue to the severity and duration of a decline in actual cardiac output in relation to optimal output. Hepatic disease may confuse the evidence, and anemia always accentuates hepatic damage in relation to decline in splanchnic flow. It is to be emphasized that rise in venous pressure, which is lowest at the center or outflow zone of the lobule, does not damage the liver. In heart failure and in cirrhosis of the liver venous pressure is high in glands like the pancreas, where venous pressure is always higher than in the liver, through which all the splanchnic venous blood flows. In spite of exceedingly high venous pressures, changes do not occur in gastrointestinal or pancreatic glands simi-

lar to those observed in the liver in cardiac failure. While hepatic damage is not due to high venous pressure, once the centers of lobules are changed to venous lakes hepatic volume increasingly reflects the levels of hematic volume and venous pressure.

EDEMA AND DYSPNEA IN CARDIAC DISEASE

Shortness of breath is due to many factors. A decidedly important one is the responsiveness of the central nervous reflexes which control respiration. Many persons become short of breath, but actually overventilate their lungs, when they are emotionally disturbed. In its extreme form this is hysterical hyperpnea. Heart disease not infrequently occurs in patients with highly reactive breathing centers, and they are dyspneic with little organic disease. The sensitivity of the nerve endings in the lung is increased by inflammation or by sudden changes in the stiffness of the lung. Hence one observes dyspnea at rest at the onset of pneumonia, when only a small fraction of the lung is involved, and may encounter none in advanced tuberculosis. Edema of the lungs, or sudden rise in pulmonary venous pressure, may stiffen the lungs and make respiration rapid, shallow and inefficient. Both of these conditions also encroach on the air space in the lungs and reduce the vital capacity—the volume of air the patient can move with one maximal inspiratory and expiratory effort. Dyspnea is often minimal in young persons with mitral stenosis and exceedingly high pulmonic venous pressure. This leads one to conclude that pulmonary edema and sensitization of the respiratory reflexes due to inadequate supply of blood to the tissues of the body are the chief causes of cardiac dyspnea and of the dyspnea seen in shock and anemia.

Pulmonary edema, the chief factor in determining the urgency of cardiac dyspnea, is often a purely local manifestation of general anasarca. At times, however, pulmonary edema is pronounced although edema elsewhere in the body is not demonstrable. To understand these two types of pulmonary edema, and their endless intergradations and combinations, the main factors responsible for the localization of edema must be borne in mind. The thesis that edema is merely a resultant of high venous pressure and low serum protein is now known to be inadequate.

Experimental Production of Edema.—The simplest way to cause experimental edema is to abolish the pulse wave and perfuse the vessels with blood under a constant head of pressure. Lymph flow depends on the pulsation of the small vessels; it ceases and edema develops rapidly when pulsation is reduced or abolished.[9] Then venous pressure may be low and serum protein high, but edema forms quickly and inevitably. Vasoconstriction or arterial disease with resulting low pulse pressure predispose to edema formation. In thrombophlebitis of the leg edema formation is minimal, in spite of high venous pressures, unless there is arteriospasm. Relief of this spasm by paravertebral block may cause the edema to diminish greatly in a few hours, although venous pressure actually rises with the increase in arterial flow.[10]

In normal men and animals lymph flow ceases in a motionless dependent limb.[11] High venous pressure merely exaggerates the rate of edema formation in such dependent tissues. There is no general lymphostasis in patients with cardiac disease, even when venous pressure at the orifice of the thoracic duct is unusually high. When the legs have been edematous for long periods, the patient with cardiac disease may have dilated channels and incompetent valves in the lymphatic vessels of the edematous regions.[11b] When the leg is raised to the level of the heart as the subject lies down, flow in these channels is as rapid as that in the narrow lymphatic vessels of normal skin. The chief effect of increase in rate of tissue fluid formation, in cardiac disease or in hypoproteinemia, is to increase the rate of lymph flow.

The rate of fluid accumulation in the forearm when veins and lymphatics are occluded by a pneumatic cuff at 20 mm. of mercury is about equal to the lymph flow, per gram of tissue, from the heart or the lung of a dog under basal conditions.[12] At a venous pressure of 50 mm. of mercury fluid accumulates ten to twenty times as fast. In the dog, lowering plasma protein from 6.5 Gm. to 4 Gm. per hundred cubic centimeters raised the lymph flow sevenfold, and compression of the pulmonary veins until pulmonary arterial pressure was raised from 22 to 55 mm. of mercury raised lymph flow thirtyfold.[11a] These observations suggest that extra fluid formed in the tissues by rise in venous pressure can be rapidly returned to the blood stream via the lymphatic vessels. But in injured or dependent regions edema formation is hastened by high venous pressures.

Hemoconcentration is seen in acute cardiac failure only if the patient has become dehydrated. The blood volume either is normal in relation to the hemoglobin level in the patient with cardiac disease, or it is elevated. Renal function declines not because of but in spite of a high plasma volume, and on recovery renal function rises as blood volume falls. Thus, cardiac edema can never be explained in terms of high venous pressure, rapid formation of tissue fluid, extrarenal diversion of fluid or renal retention to restore blood volume.

The experiments of Wégria and his associates [13] with dogs show that rises in renal venous pressure between the limits of 15 and 40 cm. of water do not reduce renal blood flow or filtration rate, but as the venous pressure rises the rate of reabsorption of water and salt by the tubule increases. Pressure was raised only in the left renal vein, and the functions of the two kidneys were compared. A concentrated urine, low in sodium, came from the congested kidney. At levels of venous pressure around 30 cm. of water, salt and water excretion by the congested kidney was reduced as much as 50 per cent in these experiments with acute venous pressures. Therefore, rise in systemic venous pressure does augment the salt and water retention which is evoked by a fall in the ratio of actual cardiac output to optimal

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cardiac output, with reflex renal and endocrine adjustments similar to those in shock and with the low blood volume of hypoproteinemia. The mechanisms which evolution has perfected to deal with shock are not inhibited when cardiac output is impaired by heart failure, they are potentiated by rise in systemic venous pressure.

Until the body begins to store up water and salt, rise in venous pressure does not cause massive edema. When retention of water and salt has increased the extracellular fluid of the body by 10 to 20 per cent, edema appears regardless of venous pressure. This will first be evident in the sites where tissue pressure is low, pulsation is small and venous pressure relatively high. In the splanchnic area, which drains through the portal vein, venous pressure is relatively high in all mammals. In man, due to the erect posture, venous pressure is relatively high in the legs during much of each day and it is high in the dorsal part of the lungs when man is supine in bed. In most mammals retention of fluid is first evidenced by ascites; in man it is first apparent in the legs by day and in the lungs at night. In many women premenstrual edema occurs as a result of the salt-and-water-retaining action of ovarian steroids. This usually takes the form of edema of legs and ankles; it occurs with normal levels of protein, venous pressure and pulse pressure. Similar edema can be evoked with desoxycorticosterone, or with daily doses of sodium chloride over 25 to 30 Gm. If cardiac failure is latent, any of these causes for ankle edema may produce pulmonary edema beginning usually with acute nocturnal seizures.

Pulmonary Edema.—While the spongy pulmonary tissue would appear to be a preferred site of edema formation, it must be remembered that the mean pulmonary arterial pressure is actually less than the colloidal osmotic pressure of plasma, so that transudation will occur slowly under normal conditions. Even after pulmonary hypertension has developed, the high pulse pressure, the rapid lymph flow and the evaporation from aerated alveolar surfaces all serve to cut down pulmonary edema. When venous pressure rises gradually, over months or years, as in the lungs in disease of the mitral valve, the walls of the venules are structurally altered, so that transudation is matched by lymph flow under the existing venous pressure levels.

Pulmonary edema occurs late in hypoproteinemia or when pulmonary venous pressure rises steadily to abnormally high levels, but it may be the first sign of cardiac insufficiency. In the past, this has been blamed on "left-sided failure," because it was usually seen in aortic valve disease and in hypertension; no one seemed disturbed by its late occurrence in that form of disease of the left side of the heart, mitral stenosis, in which pulmonary venous pressure was highest and the capacity of the left side of the heart to receive and forward blood was least adequate to respond to bodily needs or right ventricular output. In mitral stenosis pulmonary arterial pressure rises, secondary to the rise in venous pressure in the lungs, and the right ventricle often is greatly hypertrophied. From appearances, this right ventricle should be able to force large amounts of blood into the lungs and thus overwhelm the left side. But pulmonary edema occurs late, when generalized edema and ascites are well defined. In patients who do have pulmonary edema, the left ventricle is hypertrophied, while the right may be normal. Any acute rise in pulmonary venous pressure and resistance to pulmonary flow would seem far more likely to reduce right ventricular output in these persons than in the patients with mitral stenosis. And as the patients who get acute pulmonary edema often do so at night, when bodily demand for blood flow is minimal, and are able to carry out vigorous effort by day, it seems unlikely that high right ventricular output alone causes pulmonary edema in these cases. The paradox of acute pulmonary edema is best understood by comparing what happens in a typical day in mitral stenosis and in a case of aortic disease with acute nocturnal dyspnea due to pulmonary edema.

EFFECT OF SODIUM RETENTION

Mitral Stenosis.—A patient with mitral stenosis, slight ankle edema and an enlarged liver has learned that she sleeps better propped up on several pillows. In the sitting position, even in normal persons, vital capacity is higher than when recumbent. As the center of mass of the left ventricle averages 7 to 10 cm. lower, in relation to the center of mass of the lungs, in the erect position than when one is supine, the average pulmonary venous pressure must rise 5 to 8 mm. of mercury in order to maintain the same blood flow in the supine posture as when erect.[14] Cardiac output rises when one lies down, partly because the venous blood trapped in the legs and abdomen by gravitational pressure in the veins flows back into the main venous reservoir, partly because a slight fall in peripheral resistance and in diastolic pressure occurs when the cerebral region is lowered to the plane of the heart. On going to bed, therefore, everyone experiences a rise in pulmonary venous pressure and a lower venous pressure in the legs. In mitral disease both effects are reduced, because the patient usually sleeps propped up in bed. Because pulse pressure in persons with mitral disease is usually low, and the legs are still below the cardiac level when the patient sleeps, edema fluid is mobilized slowly and sudden shifts of blood and edema fluid seldom occur at night. If such a patient has much salt at dinner, she usually notices that her legs are more edematous next morning, and her dyspnea on dressing may be increased.

Aortic Insufficiency.—On the other hand, a well-compensated middle-aged man with aortic insufficiency usually has high pulse pressures in his legs and no decrease in cardiac output under basal conditions. On exercise, his pulse pressure increases, but if he is on his feet and working all day, his output may not rise enough to prevent decrease in renal blood flow, with salt and water retention. Usually this is excreted as fast as it is mobilized from his lower extremities after he goes to bed. His cardiac output is normal for basal conditions, and in bed it is not as great as when he was exercising and had muscular vasodilatation by day. One day his exertions are greater, his salt intake higher and his fluid retention more than usual. Although he has not noticed edema of his ankles, when he lies down a liter or more of saline solution rapidly is mobilized into his blood stream, raising effective blood volume and cardiac output even higher than it usually is when he is in the recumbent position. Since his muscles are at rest and muscular vasodilatation absent, systemic resistance is relatively high. In aortic insuf-

14. Dock, W.: Anatomical and Hydrostatic Basis of Orthopnea and of Right Hydrothorax in Cardiac Failure, Am. Heart J. **10**: 1047-1055, 1935.

ficiency the left ventricle empties its huge stroke volume but diastolic reflux is increased if the peripheral vascular tone is high.

As a result of increased stroke volume without vasodilatation, left ventricular diastolic pressure and pulmonary venous pressure soon rise above the daytime level. Edema begins to form in the lungs, where ventilation is minimal and evaporation much less than when the patient was active during the day. Most of the lung is dependent to the left ventricle, and edema forms readily at the most dependent parts. Aeration ceases in these, and arterial cyanosis develops as blood pours through these airless lobules. Arterial anoxia causes reflex pulmonary vasoconstriction and rise in heart rate; these in turn reduce pulmonary pulse pressure and lymph flow. Pulmonary edema rapidly increases. The man awakes, gasping and frightened. Breathing now causes audible rattles, which frighten him more, and this in turn causes pallor and further systemic vasoconstriction, accelerated heart action with further loss of myocardial efficiency, further rise in ventricular diastolic and pulmonary venous pressures. Now, even if he sits up, the pulmonary edema may increase, but it will gradually disappear if he walks about or if the vicious circle is broken by the relaxation afforded by morphine, the improved heart action effected by strophanthin, or the fall in venous return which follows venesection or pressure breathing with oxygen.

If this man had ingested only 200 mg. of sodium the previous day he could not have retained enough saline fluid in his tissues to initiate the episode; had he been given a mercurial diuretic at 5 p. m. he would have been disturbed by nocturia but not alarmed by dyspnea. A comparison of cases of mitral and aortic heart disease brings out the relative unimportance of venous hypertension in relation to the signs and symptoms of cardiac insufficiency. Because episodes of nocturnal dyspnea occur with little other evidence of heart failure, some physicians have though the attacks must be of nervous origin. Yet the dramatic nature and occasionally fatal outcome of such bouts have led others to regard them as evidence of severe heart failure. This seldom is the case; not infrequently a man with aortic insufficiency will be able to resume hard work the morning after such a seizure.

Advantages of Sodium Restriction.—What is proved by these cases is that nothing is more harmful to the person with cardiac disease than rapid increase of blood volume by infusion of saline. The effects are especially striking when patients are suffering from febrile illness, or have been undernourished, or have just undergone operative intervention. Then liberal administration of isotonic sodium chloride solution by vein can quickly precipitate acute pulmonary edema even though myocardial failure is minimal. The rapid mobilization of edema fluid from the legs, when an ambulatory patient lies down flat, imposes a similar burden on the heart and lungs. Because they do not evoke vasodilatation or increased pulmonary ventilation, meals rich in salt and infusion of saline solution actually are worse for the heart and cause pulmonary edema in the recumbent patient much more readily than does moderate exercise in the erect posture.

About 3 Gm. of sodium must be retained to form every liter of edema fluid. When the vena cava is ligated, venous pressure in the legs is higher than in most persons with cardiac disease, but there is no sodium retention by the kidney, lymph flows freely and edema of the legs is minimal. When cardiac output falls below optimal, even though systemic venous pressure is normal, edema, ascites and hydrothorax develop if the patient is active by day and has a liberal salt intake. Among the great apes, living on seeds, nuts and fruit, sodium intake rarely is over 250 mg. on a 3,000 calorie intake; among primitive people in the tropical rain forests it is rarely more than 500 mg. per day, and often is much less. On many American diets, the sodium intake exceeds 5 Gm. per day. A truck-driver, eating four meals a day in restaurants, retained over 9 Gm. of sodium a day for three days at the onset of acute nephritis. The mechanism for sodium retention, evoked whenever actual cardiac output falls below optimal levels, is invaluable to tide men and animals over hemorrhage or shock but may lead to rapid development of anasarca when persons on modern highly unphysiologic levels of salt ingestion have even moderate degrees of heart failure for a few days.

Rate of edema formation in the person with cardiac disease is determined more by salt ingestion than by reduced cardiac output and renal blood flow, and is therefore a poor sign of the severity of failure. Its localization is not always a dependable clue to the side of the heart on which venous pressure is most elevated. Women with hypertensive heart disease often have severe ankle edema with normal systemic venous pressures. A patient with aortic, mitral and tricuspid insufficiency may have a pulsating liver but no orthopnea or ankle edema in spite of a low cardiac output and extremely high systemic and pulmonic venous pressure. Pulsation and lymph flow in such a patient's tissues are unusually good, and the blood volume is high in relation to extracellular fluid.

PULMONARY EDEMA AFTER MYOCARDIAL INFARCTION

The development of acute pulmonary edema within a few hours after the onset of myocardial infarction with evidence of peripheral vascular collapse is not uncommon. Here blood volume and extracellular fluid volume may be normal at the onset, and it therefore has been customary to ascribe the pulmonary edema to high venous pressure back of the injured left ventricle. In these cases the pulmonic second sound, as well as the other heart sounds, is usually faint. Pulmonary arterial hypertension, which invariably accompanies significant rise in pulmonary venous pressure, is absent or minimal. Pulmonary venous hypertension probably is a minor factor in this type of edema, which has been observed in other types of shock, including the shock induced in dogs by removing 25 per cent of their blood volume.[15] Pulmonary edema in these states of profound shock is apparently due to injury to the pulmonary capillaries by the products of tissue anoxia; it is aggravated by infusion of saline solution but not by transfusion. Once pulmonary edema became recognized as a sequel of peripheral shock, the mystery of pulmonary edema in acute coronary attacks, with faint pulmonic second sounds, appeared to be solved, and the rationale of transfusion in this type of shock was established.

Pulmonary edema and hydrothorax rather than high venous pressure are the important pulmonary factors in causing dyspnea in heart failure. Since cardiac edema results from the changes evoked by a decline

15. Eaton, R. M.: Pulmonary Edema: Experimental Observations on Dogs Following Acute Peripheral Blood Loss, J. Thoracic Surg. **16**: 668-694, 1947.

in adequacy of cardiac output, even cardiac dyspnea is due, fundamentally, to the decrease in effectiveness of systolic discharge and the ingestion of too much salt. The aim of therapy is, therefore, to reduce the bodily demand for a large volume of blood flow, to increase the effectiveness of systole and to combat the rise in blood volume and extracellular fluid volume by withdrawing sodium or by venesection.

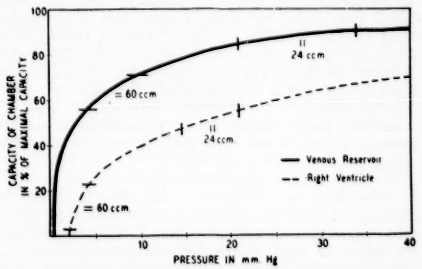
Adaptation of Body to Lessened Cardiac Efficiency.—While it is not possible to study the rate at which the body adapts in various ways to a falling level of cardiac efficiency, it has been most instructive to observe adaptation to rising myocardial efficiency under therapy. In a group of patients with low cardiac output, observed by DiPalma,[16] the blood volume prior to therapy was over 100 cu. cm. per kilogram of body weight, as compared to less than 80 cu. cm. in normal persons and 85 cu. cm. in a group with failure due to high cardiac output. Circulation time averaged 26 seconds in the high output group and 39 seconds in those with low output. The latter group, during two weeks of definite clinical improvement, had a fall of 65 per cent in circulation time and 28 per cent in blood volume. In the high output group, with striking clinical improvement, the fall in blood volume was only 5 per cent and that in circulation time was only 35 per cent. Red cell mass remained constant in those with high output but fell 25 per cent during recompensation of the low output group. In the latter group, total plasma protein values fell faster than blood volume, so that on the third day of therapy the serum protein level had fallen from 6.5 to 5.8 Gm. per hundred cubic centimeters, the blood volume from 7,400 to 6,200 cu. cm.

It is thus proved that when venous pressure rises, a high blood volume can be maintained only by increasing the total mass of blood protein and red cells, and when venous pressure falls, protein and red cells must be destroyed in order for a decline in blood volume to occur. In failure with high output, peripheral vasodilatation allows blood to enter venules under relatively high pressure, and to return rapidly to the heart even if the venous channels are relatively narrow, due to high venomotor tone. In such cases blood volume increases but little in heart failure, and if anemia is severe, the volume remains less than normal. With low output failure, the body is able to get along with a reduced total blood flow, and there is a vasoconstriction which reduces the pressure under which blood enters the venules. Wide venous channels and sluggish return flow call for a great increase in blood volume in these cases, and circulation time is slow. In both types of cases the most suitable adjustments are effected by the body.

THE NATURE OF COMPENSATION

The mechanisms called into action by a decrease in the ratio of actual to optimal cardiac output are effective in increasing venous return. When heart failure and rise in diastolic pressure in the ventricles are minimal, this suffices to raise cardiac output by increasing diastolic filling. At longer fiber length, as Starling demonstrated, the ventricle releases more energy and does more work at the ensuing systole. In advanced failure further dilatation may actually decrease stroke volume, and in such instances cardiac output falls on exercise or on lying down and rises following venesection. These patients are also the ones in whom great improvement, with decrease in heart size, occurs if they learn to live on diets low in sodium and protein. If metabolism is lowered and compensatory rise in blood volume is prevented, such patients are greatly benefited.

As failure progresses, output is not restored to optimal levels by rise in venomotor tone and in blood volume. In veins and ventricles, as in a rubber balloon, stretch decreases as pressure rises. At high levels of pressure, in the ventricles and the venous reservoirs, relatively small changes in volume occur with large changes in pressure. Where normally 60 cu. cm. can be transferred from auricles and veins to ventricles in early diastole with a rise in ventricular and fall in venous pressure that totals 10 mm. of mercury or less, at high pressures in a heart of the same size, 25 cu. cm. transferred from venous reservoir to ventricle will equalize pressure in the two chambers, with pressure changes totaling 20 mm. of mercury or more. (See the accompanying chart.) Only by decided hypertrophy of the ventricles and the venous reservoirs can a normal stroke volume be restored to an inefficient overburdened ventricle. This type of



Volume-pressure relationships of the ventricles and venous reservoirs: The horizontal lines show the pressure changes recorded in the normal subject, the vertical lines those recorded in severe heart failure, during the equalization of auricular and ventricular pressures occurring in early diastole. The stroke volume in the normal is taken as 75 cu. cm. with 80 per cent of filling occurring in early diastole. The volume noted for the case of failure is that which would be possible without hypertrophy: approach to normal stroke volume is made by hypertrophy of the ventricle and the venous reservoir.

hypertrophy does occur and explains why, in chronic heart disease, capacity for exercise may be restored to a considerable degree even though venous pressure is decidedly elevated and the shadow of the heart is abnormally large. The capacity for coronary flow increases with the ventricular weight, as long as atherosclerosis spares the large arteries.[17] Such a heart shows true compensation; the extrinsic mechanism has furnished an adequate blood volume and venous pressure, the vascular bed and heart have provided capacity to permit adequate stroke volumes at high ventricular diastolic pressures; high diastolic pressures in the ventricle evoke adequate systolic emptying. Cardiac output now more nearly approaches optimal under basal conditions or even under stress. Renal and splanchnic blood flow approach normal levels, salt and water excretion balance ingestion, and the patient's circulation is reestablished in spite of a weakened and overburdened heart. Further stress and weakening produce new episodes of failure, and eventually recompensation fails.

16. DiPalma, J. R., and Kendall, P. E.: The Relationship Between Blood Volume and Blood Specific Gravity in the Recovery from Cardiac Decompensation, J. Lab. & Clin. Med. **29**: 390-397, 1944.

17. Dock, W.: Capacity of Coronary Bed in Cardiac Hypertrophy, J. Exper. Med. **74**: 177-186, 1941.

But intervals of years, or even decades, of effective living may pass between one episode of failure and the next. During all this time, heart volume, circulation time and venous pressure are abnormal and vital capacity is low. Yet dyspnea at rest is absent, dyspnea on effort is moderate, and edema does not develop on diets reasonably low in salt. Recovery from cardiac insufficiency occurs when heart volume, vital capacity and venous pressures return to normal; compensation occurs when the patient learns to live on satisfactory terms with a dilated and hypertrophied heart.

SUMMARY

The adaptations of the body to reduced venous return to the ventricles (shock, pericardial embarrassment) or to diminished force of ventricular beat (myocardial failure) are numerous and effective. In some cases, decreased utilization of blood by the body is a striking feature, output remaining low and the tissues adapting themselves to low oxygen and high carbon dioxide tensions. In others, where peripheral vasodilatation is essential to maintain life of the tissues, blood flow may be twice normal under basal conditions in heart failure. Then again, high arterial pressure may be maintained in spite of cardiac insufficiency. In all cases venous tone rises, the renal and splanchnic blood flow falls, the blood volume and extracellular fluid volume increase. Whether rise in venous tone or in blood volume is most pronounced depends on whether the body can be satisfied by an output less than normal and a sluggish return flow through wide venous channels (low output failure) or whether arteriolar vasodilatation raises venous pressure and permits rapid return flow through narrow channels (high output failure).

To adapt itself to high arterial pressures the ventricle hypertrophies in thickness, with little change in capacity; the reverse is true in hypertrophy to maintain high outputs at normal or low diastolic pressures.[18] To adapt to high ventricular and venous pressures, when muscular efficiency is low, the ventricles and the auricles and great veins grow to be exceedingly capacious; they may finally maintain a normal stroke volume with the heart and venous reservoir three to ten times as capacious as normal.

These adaptations would be rather effective if the patient remained on a diet with a normal mammalian salt intake (less than 1 Gm. a day) and as long as he did not lie on his back. If he does the latter, pulmonary edema may develop, which can scarcely occur when the heart and lungs maintain the relations normal in mammals, the heart lower than the lungs in the gravitational field.[18] Man has not yet succeeded in effecting circulatory adaptation in the postures and on the diet which he has taken up recently in his evolutionary history. Chronic heart failure, as seen clinically, represents a combination of superb physiologic response to stress, with the breakdown of this mechanism due to man's wilful insistence on a perverted diet rich in salt and his preference for the supine rather than the prone posture when at rest. It probably will prove more effective, in the long run, to develop agents which permit man to eat his salt and not absorb or retain it, than to try to cure him of his acquired taste. And it is much easier to raise the head of his bed 18 inches (46 cm.) than to teach him to sleep on his face or propped up on pillows.

18. Rytand, D. A., and Dock, W.: Experimental Concentric and Eccentric Cardiac Hypertrophy in Rats, Arch. Int. Med. **56**: 511-520 (Sept.) 1935.

MEDICINE AND THE STATE

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When you paid me the honor of asking me to present this lecture, you will remember that I did not delay in my acceptance of your invitation. Aside from the distinction enjoyed by your society, the realization that I was following men like Thayer, William Mayo, Charles Martin, Walter Cannon, George Minot and Ludvig Hektoen, who, in addition to their eminence in medicine had been, and are, much esteemed friends, gave me a thrill of pleasure. The pleasure, however, was tinged with fear—that I should prove a very unworthy follower of colleagues whose names will pass into history as having contributed to the greatness of medicine.

To some who listen to me and wonder that I choose so topical a subject for my address as the relations between the doctor and the state, I would excuse myself by saying that I believe the present situation in respect of these two important elements in society today to be of vital importance to the progress not only of medicine but of civilization itself. There has been no single factor in the evolution of the human race, whether regarded physically or morally, so great as medicine. To substantiate this claim would take me much too far afield.

I am concerning myself this evening with the interaction of medicine and the state in their joint effort to help forward human progress through a scheme of medical care for the people.

REQUIREMENTS FOR IDEAL MEDICAL CARE

In the first place, therefore, I suggest that we define our needs in regard to an ideal scheme of medical care. This is not really very difficult.

1. We must help the fit to remain fit, by "keeping the ring" for them and by preserving the amenities. There was formerly an "occupational" fitness but this has seriously diminished, largely as the result of urbanization of great numbers of our citizens. We must also help the near-to-fit to be quite fit. This does not require artificial means, because health is a natural thing—Nature tends that way if she is given a chance.

2. We must raise the general standard of fitness (i. e., health) by correcting certain tendencies toward lowering it which are inherent in modern life. The life led by many clerks, miners and school children impedes natural functions. More important still, we must provide enough of the proper food for those millions of our fellows who do not at present get it.

3. We must do our utmost to control disease due to preventable agents. This means research and an army of well trained medical officers of health to implement the knowledge that we have and are yearly increasing.

4. We must cure or alleviate disease when it occurs. This means an army of well qualified doctors for attendance on the family in its homes, and well equipped hospitals for institutional treatment.

These are our needs, and they should be considered in that order—more and more in that order as civilization progresses and as the grosser infections come under control.

Chairman of the Fellowship for Freedom in Medicine, London.
William W. Root Lecture, delivered at the Annual Dinner of the Alpha Omega Alpha Society, Atlantic City, N. J., June 9, 1949.

PRINCIPAL FACTORS IN MEDICAL CARE

In trying to satisfy these requirements we are all concerned, not merely the doctor, the medical officer of health and the administration, but the people themselves. You cannot make people healthy any more than you can make them good.

Of the citizen I do not speak today, important though his contribution is. The second party in the scheme is the doctor, the "health man" who makes contact with the citizen and "gets the thing across." He is the most important part of the medical care system, because it falls to him to diagnose the citizen's degree of health or, alternatively, the nature and degree of the citizen's deviation from health. This function of the doctor cannot be usurped by any one else. The doctor is right and is acting in the public interest in zealously guarding this privilege—great obligations are laid on him. The fact that he enjoys public confidence to the extent that he does is proof that in the main he carries out these obligations.

The third party to the contract is the state. The function of the state in regard to medical care is to see that the whole gamut of knowledge and skill, which is resident in the physician, gets as unobstructed a channel as possible between it and the citizens. The state should help in the construction of the machine of medical care but should not itself run the machine. This is the job of the expert, and the expert is the doctor.

PRESENT THOUGHT ON NATIONALIZED MEDICINE

With these preliminary and basic considerations let me turn to what I have called the present situation with regard to medicine and the state.

President Truman's now historical message to Congress on April 22 last opened with the following pronouncement:

> In a special message to the Congress on November 19, 1945, and in a number of messages since that date, I have recommended the enactment of comprehensive legislation to improve the health of the people.
>
> The issues involved in these recommendations have been debated all over the country. . . . There has been increasing recognition of the need for positive, planned action to bring adequate health services within the reach of all our people. . . .
>
> Legislation has already been enacted which is helping substantially to provide better health services and medical care.
>
> However, the action thus far taken falls far short of our goal of adequate medical care for all our citizens. If we are to deal with the problem realistically and in its true dimensions, action is required on a broader scale. . . .
>
> Now that we have the medical knowledge that can bring good health within our reach to a degree heretofore undreamed of, we must improve the means for putting that knowledge to practical use. Good health is the foundation of a nation's strength. It is also the foundation upon which a better standard of living can be built for individuals. To see that our people actually enjoy the good health that medical science knows how to provide is one of the great challenges to our democracy.

The President proceeded to outline in very broad terms the desiderata in respect to an extension of medical care for the whole nation and considered that this can be accomplished only by a method of compulsory health insurance.

Neither of the two terms with which we in Great Britain have become so familiar—socialized medicine and nationalized medicine—occurred in the President's message. This omission may, of course, have been deliberate. In a way, the omission of the term socialized medicine may be a good thing, because (as I have so often pointed out) it is an entirely ambiguous expression. It may merely mean making medical care available to every citizen, a purpose to which all of us with a humanist outlook must surely subscribe; or it may mean nationalizing medical practice—that is, the state taking control of the medical profession in all its branches and all the mediums through which it operates.

On July 5 last, medicine was actually nationalized in Great Britain as the result of the passing of an Act of Parliament so framed that the minister of health could, by regulations under the Act, direct the whole medical care of the country, whether operating through institutions such as hospitals or through physicians engaged in private practice. His powers under the Act are almost unlimited. I consider it vital that this distinction between socialized medicine and nationalization of medicine be made clear to the public. My own country was misled into thinking that what was intended was the socialization of medicine in the first sense I have attributed to the term, whereas what the government had in view was the nationalization of medicine in the same sense as it had nationalized the mines and the railways and now proposes to nationalize steel.

To return to the President's message, men of good will hailed this as indicating an earnest endeavor to take social betterment, through medical care, a long step forward; the cynic saw in it little else than one more example of political exhibitionism.

It does not really matter whether the message was an expression of the Messiah complex or of political expediency; what matters is that it has caught the public imagination and that the citizen has tuned in to the idea and is quite likely to ask for some practical fulfilment of the implied promise. And not only has it appealed to the man in the street—who, after all, when benefits are offered and no immediate payment of a proportionate kind is asked in return, is very prone to join that curiously mixed group which the scriptures tell us are "never satisfied"—but to more responsible folk. When I was in Washington recently, I found my colleagues of the Food and Agriculture Organization of the United Nations were also intrigued, as it were, by a presidential slogan; they were talking in terms of point 4 of the Inaugural Message and seemed to have forgotten that at Hot Springs and at Quebec the formula which guided their efforts was even wider in its scope and was several years older. This formula committed "the Nations accepting the Constitution of the United Nations to a determination to promote the common welfare—for the purposes of raising levels of nutrition and standards of living," and so forth.

There was nothing really new in all this. It was rather like opening a scientific meeting by reading the Sermon on the Mount—and why not, since science exists for man and not man for science? What is new is the emergence of the individual, an event which is the real crux of what has been called the changing order in society, and which we discussed so fully at the centennial of the New York Academy of Medicine in 1947. This emergence has synchronized with a number of profound alterations in the way of living and in social attitude. Among these are industrial expansion, poverty, the rise of big business and big government, the arrival of social service and the development of voluntary health insurance plans.

EMERGENCE OF THE INDIVIDUAL

There are two even more basic elements in this concentration on the individual which is the fundamental feature in the changing order. The first is recognition of the fact that the citizen himself and not his goods and chattels, or the want of them, constitutes the real wealth or poverty of a nation. Thinking men have told us this again and again. (You remember the old cliché, "The health of its citizens is a nation's greatest asset.") But we did not listen until dire national peril was upon us. During the recent war we passed our men and women through a finer comb than we had ever done before, and now, in the postwar era, manpower is the commodity we find in shortest supply.

The second basic element leading to the emergence of the individual is his own spiritual evolution. That the evolution of personality proceeds along lines which tend to help humanity forward is generally accepted. In the course of this evolution the individual very reasonably says to medicine, "What can you do for me?"

Now, although it is true that, being based on science, medicine to be really progressive should command a degree of autonomy—of freedom—there is agreement that its full powers should be applied to the attainment of the health and happiness of the individual. In so far as the state acts wisely in the interests of the citizens, this desideratum has always been recognized. At first it was recognized only dimly, but later more clearly, so that there has today opened up for the statesmen, the sociologist and the physician a large field for their inquiry and their action, and this field is common ground. The man of medicine must not spend all his time in this field; he must go apart, whether in the laboratory or at the bedside, or, like Harvey, walk under the trees rapt in thought so that by observation, by experiment and by contemplation he may keep medicine dynamic. For it is through medicine that the doctor makes his contribution, a contribution which no one else can make. On the other hand, to stand aloof from the work going on in this same field is to do a disservice not only to society but to medicine itself; but to become entirely absorbed in it is to do a disservice no less serious. Sigerist said:

"The history of the medical ideal is the history of human society. Seeing that the position of the sick in society differs with every cultural epoch, the demands upon the doctor and his position in the social structure change constantly; but though they differ in detail they remain the same in their fundamental claims. The good physician was at all times the physician who felt himself bound by the medical ideal of his time. Men like Hippocrates, Sydenham, Laennac, Billroth and Osler were therefore great physicians and will always occupy a special position in the history of medicine. A clear understanding of the prevailing medical ideal is of great importance."

Can we achieve this end, about which we are all agreed? And, if so, how? Let us suppose that we in Great Britain had been given the chance of helping the state by making constructive suggestions—what would these have been? In the first place there is surely consensus concerning certain basic desiderata: 1. Medical care should provide everything that science can offer toward the preservation of health and the cure of disease; the whole corpus of knowledge, as it is termed, must be implemented in the citizen's interest. 2. Then surely it is agreed that these benefits should be available to the entire population. 3. Seeing that the general public has a vital interest in our plans, it should be adequately represented in their formation. 4. But inasmuch as it is the doctor who must render the medical care, he should play a dominant part in the preparation of the scheme he will be called on to carry out.

If, as I say, we had been consulted as to how this ideal could be achieved we should have emphasized our belief that gradual extension and improvement of medical care is preferable to revolutionary changes and that, while recognizing the responsibility of the government for the citizen's health, we should have warned the state that sweeping legislative action would defeat its own purpose by impairing the spirit and quality of a service which is essentially individual and personal.

CRITERIA FOR ACHIEVEMENT OF THE MEDICAL IDEAL

As to the conditions necessary to bring about the desiderata I have enumerated, there are certain paramount criteria. The gist of these is that the quality or standard of medical care must be preserved; provision of public health services is, of course, essential; then there must be effective use of hospitals with adequate facilities; trained professional and nonprofessional personnel is a *sine qua non*; organization and coordination of physicians through the extension of medical groups and health centers must be encouraged; voluntary prepayment plans should be supported; extensive education for both physicians and the public is required, and, finally, government help, preferably by grants in aid, would be necessary. Indeed, a method of grants in aid would seem to offer the brightest promise, as far as help by a central authority is concerned.

We must realize that the practical expressions of unplanned energies are often cumbersome and wasteful. This is the price we pay for highly individualized societies. We began doing things many years ago; we did some of them so well that it has never been considered helpful to scrap them. There are parts of the machinery of our health services which work perfectly; some units stand out as pieces of perfect organization and efficiency—the large voluntary teaching hospital; many special hospitals; the well-managed cottage hospitals, as we term them in Britain; some of our public health services, and our Medical Research Council. A wise state, on examination of these units, will not scrap them at sight but, realizing that it cannot hope to do the thing better (or as well), will stand by them, will help them and will integrate them in a general scheme of medical care.

One other thing; to make medicine a complete science in the service of man, we must see that it infiltrates the important and now more clearly perceived sphere which lies between that in which the diseases of the individual patient are treated by the individual physician and the sphere in which the preservation of the public health is achieved by the medical officer of health. This largely untilled field includes all the environmental factors which influence health and happiness: conditions of work, home life, the sense of security or insecurity. In short, as Professor Ryle has stated: "Our next advance (in medicine) will be . . . concerned with causes, but with the ultimate, rather than the intimate, causes of disease." Professor Ryle's term "social pathology" is an apt designation for this work. A study of the environmental factors in the etiology of disease was overdue; it is high time that they were studied and the results statistically analyzed.

That, I think, is how we should have put the case for medicine in its relation to society. But we should

fail in an important part of our duty if we did not, at the same time, warn the state that if it did not attend to the more basic needs of the citizens our direct contribution from medicine would avail little. By basic needs I mean: a sufficient amount of the proper food, suitable shelter and clothing, a satisfactory job of work, access to fresh air and sun, reasonable leisure and the amenities of life. The doctor must stake out the citizen's claim in every one of these needs. We physicians must lead in all this; we must guide the politicians, since they cannot act without expert help; we must keep the citizen's end up, since he learns to rely on us for support.

But suppose the politician won't be guided? Suppose it is as Swift wrote in a letter of Pope: "Although I have known many great Ministers ready enough to hear opinions, yet I have hardly ever seen one that would descend to take Advice; and this pedantry ariseth from a maxim which they themselves do not believe at the time they practice it, that there is something profound in politics, which men of plain honest sense cannot arrive to." In that case the physician has no alternative but to appeal to public opinion, continuing to serve his patient in the manner which he believes to be in the patient's best interest.

THE NEED FOR UNITY OF ACTION

That, I say, is how we should have stated our case. And, as far as we had a chance of so doing, we in Britain did. It was a pity that we had no machinery by which we could express ourselves as a corporate whole. We had no actual guild. Lacking unity and scattered in different camps, we were taken off our feet. Precipitate action was the order of the day. We were bustled into premature action against our better judgment. The rank and file of the profession were maneuvered into acquiescence by economic pressure and not from conviction. Only unity could have saved us, and unity was what, at the critical moment, we lacked. We forgot that we were experts and that only as experts should we agree to cooperate. We moved from an attitude of dignity and calm detachment from political clamor to one of subservience to a doctrinaire socialist adventure. We ceased to be masterpieces and became pawns in the game. And so we have become what we vowed at all costs we never would become—mere servants of the medical bureau. The whole philosophy of the physician-patient relation has changed. We are no longer in control. Instead of saying "What is troubling you; tell me, so that I may help you," we say "What is it that you want?"

Those who have nationalized medicine in Great Britain call us, who have pleaded for evolution rather than revolution, reactionaries. But it is they who are the reactionaries. They have put back the progress of medicine, both in its art and its science, a hundred years. Medicine had found that the close relation of doctor and patient was the sine qua non in medical care. For the time being this has been to a large degree sacrificed.

You in America can, if you will, escape this peril. You have time. I am old enough not to be charged with egregiousness if I offer my colleagues here a warning and express a hope. Do not risk a head-on collision with the state; if you do you will lose. Accept the challenge that is implied by the President's message. "Make medicine available for every citizen," he says. "Certainly," you should say, "that is what medicine is for. But what medicine? Our medicine, the medicine that results from tradition, long training, knowledge of our fellow man and the creaming off from science of the best that it offers to the physician? Or a stereotyped medicine of the state, which is but a bastard sort of medicine?" Surely, there can be only one answer. It is easy to level down; this can be done almost by a stroke of the pen. It is difficult to level up; this takes time and labor and much thought. So, I say, do not move away from general principles; they are the only things which ultimately triumph. And what are these general principles? Expert knowledge, detachment from politics, public confidence and courage; these are the essentials that enable medicine to make its contribution to the common health and the common happiness. You have in this country fought a good fight against the quack doctor in private life. You have a harder fight before you—the fight against the quack in public affairs. Put the case for medicine before the Public,—put it clearly, modestly and briefly. This is their case as well as ours, it is even more their case than ours. I believe that, with vision, you will succeed. If you fail, if the public will not be saved, well, in the vernacular, "that is just too bad." It will be a depressing thought for me, with so many good friends among you, that, while you are a country of infinite capacity and infinite ingenuity, you are yet a country of infinite credulity!

RATE OF BLOOD FLOW THROUGH STANDARD GAGE NEEDLES UNDER PRESSURE

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and
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The recent war coupled the great need for the rapid transfusion of blood with the need for readily available supplies of blood and plasma. The use of large needles and methods of pumping these fluids intravenously under positive pressure resulted in the transfusion of previously unheard of quantities at almost unbelievable rates of flow. Most civilian hospitals are well aware of these methods, and several articles have been published with standard technics. Reports of the use of large amounts of blood are now a daily occurrence.

Except in emergency rooms where treatment for traumatic accidents is frequent, the main need for the rapid transfusion of large quantities of blood exists almost solely on the delivery floor and in the operating room. It is still difficult, even in many well equipped institutions, to obtain the apparatus for supplying blood under pressure and needles of sufficient size for the rapid transfusion of blood.

Jean Poiseuille, about the year 1800, expressed the flow of incompressible liquids through tubes of small bore in the absence of turbulence as:

$$q = \frac{pr^4}{8nl}$$

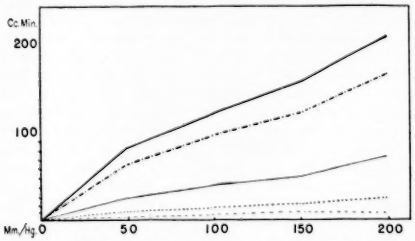
where q is flow in cubic centimeters per second, p is pressure in dynes per square centimeter, r is the radius of the tube, n is the viscosity and l is the length in centimeters.

From the Departments of Obstetrics and Gynecology, Georgetown University Hospital and the Yater Clinic (Dr. Dill).

Reviewing this equation roughly, one may say that with a given transfusion system, and using material of the same viscosity:

$$q \text{ varies as } pr^4$$

This is of significance in that although the flow is shown to increase directly with the pressure, it increases directly with the fourth power of the radius of the end of the tube.



The rate of flow in cubic centimeters of blood per minute (vertical column of figures) through standard gage needles under the stated pressure. (The horizontal row of figures shows the pressure in millimeters of mercury.)

This paper is presented to emphasize the necessity for including in transfusion sets, as standard equipment, the materials for the rapid transfusion of blood.

METHODS AND MATERIALS

The materials used were standard equipment modified for pressure transfusion administration. These consisted of a Baxter 19-R Y-type recipient set, blood flasks, B-D needles numbers 22 (0.016 inch, or 0.041 cm.), 20 (0.023 inch, or 0.058 cm.), 18 (0.033 inch, or 0.084 cm.), 15 (0.054 inch, or 0.137 cm.) and 13 (0.071 inch, or 0.180 cm.), an infusion stand and a mercury type sphygmomanometer with a suitable tubing arrangement for application of measured pressure to the blood flask. The fluid used in the flask was whole blood, which was in a good state of preservation.

The apparatus was set up as if for pressure transfusion, with rubber reinforcements applied at weaker points to protect against disruption. The blood flask was placed at a level 28 inches (71 cm.) above the needle adapter. Needles of the various sizes were fitted to the needle adapter, and flow rates of fluids throughout the system were recorded with pressures of 50, 100, 150 and 200 mm. of mercury.

TABLE 1.—*Relationship Between Blood Flow and Pressure Applied to the System*

Needle Size	Blood Flow (Cc. per Minute) According to Pressure			
	50 Mm. Hg.	100 Mm. Hg.	150 Mm. Hg.	200 Mm. Hg.
22	4.75	6.75	7.0	8.6
20	13.25	18.5	24.0	30.0
18	32.6	44.0	54.0	74.0
15	68.0	95.0	135.0	164
13	84	122.6	154	208

TABLE 2.—*Relationship of Change at Constant Pressure of Inside Diameter of Needle to Change in Flow* *

Needle Size	Increment in Bore	Increment in Flow
20	1.4 times	2.8 times
18	2.0 times	7.0 times
15	3.4 times	16 times
13	4.4 times	18 times

* Bases of comparison are the inside diameter of the 22 needle and flow of 4.75 cc. per minute at a pressure of 50 mm. of mercury.

Two readings were obtained at all pressures for each type of needle on three separate blood samples. The average obtained from the series is presented in the charts.

RESULTS

Table 1 and the chart show the rates of flow as recorded by the equipment described, with needles varying in size from 22 (0.016 inch [0.041 cm.]) to 13 (0.071 inch [0.180 cm.]), with pressures varying from 50 to 200 mm. of mercury.

It is noted that the flow increases directly with pressure and becomes doubled with an increase in pressure of four times in needle size from 22 to 18. With the large bore tubing, the flow at 200 mm. of mercury of pressure is approximately 2.5 times that at 50 mm. of mercury of pressure.

The most obvious observation is not the increase in flow with increase in pressure, but the vast difference in flow occurring from smaller to larger needles. Table 2 shows the increase in flow at a constant pressure with increasing diameters of needles.

The largest increment in flow occurred between the 18 needle and the 15 needle, where the diameter changed 1.4 times but the flow was increased 9 times.

COMMENT

It may be seen from the tables and the chart that the use of a pump except on an exceedingly small bore needle (specifically, 22) increases the flow through that system linearly and roughly in proportion to the increment in pressure. Viscosity effects and eddy currents produced by irregularities of bore of the system undoubtedly account for the loss in flow over the theoretical values. The most striking difference noted was the sudden increase in flow in changing from an 18 to a 15 needle, even without pressure other than the force supplied by gravity (roughly taken as 50 mm. of mercury).

There are objections to the use of a needle of this large bore, but for the most part they are theoretical and greatly outweighed by the advantages. Objections given are: (1) difficulty in insertion in patients with small or collapsed veins, (2) unavailability of such needles in standard equipment and (3) the danger of overloading the right side of the heart with rapid inflow of fluid. In patients with small veins, when no real reason for rapid transfusion is evident, a smaller bore needle may be substituted until the need for rapid transfusion is imminent. In patients with collapsed veins due to shock, there should be no quibbling—the largest bore needle that can be inserted into the vein should be used and a cut-down made of large veins with the insertion of a cannula effected without loss of time.

The last objection, that of overloading the right side of the heart with large amounts of blood, is valid only in patients not in shock or whose circulating volume has not been depleted. It is true that blood being pumped into a normally circulating volume at the rate of 60 cc. per minute may cause right-sided cardiac failure, or in patients with myocardial damage this may be a valid contraindication even in the presence of mild shock. There is no reason to believe that pulmonary edema from overloading the circulation can be produced in patients with normal cardiovascular systems who have lost blood rapidly.

CONCLUSIONS

When the need or possible need for the rapid transfusion of blood exists, a transfusion set which can constantly infuse large quantities of liquid should be utilized. The effect of rapid blood loss may be minimized by the application of pressure within physiologic limits and the use of needles of sufficient bore to allow infusion of large quantities of blood. Under the conditions of this experiment, it would seem that the utilization of pressure from 100 to 200 mm. of mercury on the transfusion system and 15 gage needles will suffice to transfuse blood at a rate sufficiently rapid to meet all but the most severe and sudden types of blood loss.

CLONORCHIASIS IN THE UNITED STATES

Report of Four Cases

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Human infection with Clonorchis sinensis (the Chinese liver fluke or the Oriental bile duct fluke) has been encountered infrequently outside of the Far East. Reports in Western medical literature deal largely with the infection in Chinese and Japanese who have emigrated.[1] However, Binford [2] reported 4 instances of clonorchiasis in leprous Hawaiians; the disease was contracted, presumably, by the ingestion of fish imported from China. Howard [3] observed the disease in an Englishman who had never left Great Britain.

During the past eighteen months, in the course of routine examinations for intestinal parasites, we detected the ova of C. sinensis in the stools of four Caucasians living in New York City. These persons had come to the United States from Shanghai, China, where they had lived for several years. To our knowledge these are the first cases of this disease among members of the white race to be observed in this country. The discovery of these cases is another example of the global dissemination of regional diseases by the movement of populations as a result of the last war. It is likely that other persons infected with C. sinensis are already in our midst or will live in the United States in the future. This possibility has been favored by the presence of our military forces in China, Korea and Japan, the principal endemic foci of clonorchiasis. In fact, a recent report stated that this disease was observed among American military personnel in China.[4] It is the purpose of this communication to present clinical data obtained in the study of the 4 cases of infection with Clonorchis and to review briefly the principal epidemiologic and clinical features of the disease.

GENERAL CONSIDERATIONS

Geographic Distribution.—Clonorchiasis is encountered chiefly in China, Japan and Korea; it occurs also on the island of Formosa and in French Indo-China.[5] The heaviest incidence is in South Central China, in Kwangtung Province, where 80 per cent of the population of Canton were found to harbor the parasite.[6] In Hong Kong 13.9 per cent of the postmortem examinations in one survey revealed infection with Clonorchis.[6] Recent studies indicate that the Shanghai district is an important focus of this disease.[7] Clonorchiasis occurs throughout Japan, with the heaviest foci of human infection in the prefectures of Okayama, Saga, Hyogo and Saitama. In 1938 a survey of intestinal parasitism in Japan revealed that 0.26 per cent of 346,353 persons found to be carriers of the eggs of parasites harbored liver flukes.[8] In Korea this disease is widespread. The incidence is greater in the southern part of the country, especially in the lowlands. In certain regions 10 to 25 per cent of the persons examined in surveys were found to be infected.[9]

Epidemiology.—Clonorchis sinensis is a small trematode (fluke) which resides in the biliary passages of fish-eating mammals. It was first described in man by McConnell in 1875 at the autopsy of a Chinese in Calcutta.[10] Our knowledge of the life cycle of the fluke and the manner of human infection is due largely to the studies of Faust and associates.[11] The trematode ova are passed in human or animal feces and, on contact with fresh water, liberate free swimming, ciliated miracidia which parasitize various species of small snails, Parafossarulus striatulus (China), Parafossarulus var. japonicus and Bulinus fuchsiana (Japan). Within the snail they give rise to sporocysts. Finally, free-swimming cercariae are liberated from the snail and live for twenty-four to forty-eight hours. If the cercariae reach a suitable fresh water fish, they penetrate the musculature and encyst there as metacercariae. After ingestion of the fish by man, the encysted metacercariae give rise to the adult worms. About forty species of Oriental fish belonging to the families Cyprinidae, Gobiidae, Anabantidae and Salmonidae have been reported as naturally infected.[5]

The ingested metacercariae excyst in the duodenum of man, and the larvae migrate to the common bile duct and the intrahepatic biliary channels, where they mature into adult worms in one month. The adult flukes cannot withstand the action of the intestinal juices. The ova, deposited in the biliary passages, find their way to the intestinal tract either directly or after being

From the medical services and the Department of Bacteriology of the laboratories of Mount Sinai Hospital.

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stored in the gallbladder. In heavy infections ova are also deposited in the pancreas.[12] The entire life cycle from ovum to adult fluke is completed in three months.

In a study of the fish-eating habits of Chinese who harbored C. sinensis,[11] it was observed that 58 per cent ate raw fish prepared in salads, 18 per cent ate raw fish dipped in boiling water, broth or congee (rice gruel), 14 per cent ate the fish slightly fried, 6 per cent ate it dry and 4 per cent cooked the external part leaving the inside uncooked. The 4 infections reported by Binford among leprous Hawaiians [2] were acquired, presumably, by the eating of imported fish. Howard's case in England [3] probably involved infection in this manner. In a case recently reported by Crawford [4] the patient ate fish at a Chinese banquet on only one occasion.

In the Chinese province of Kwangtung, the principal focus of the disease, the raising of fresh water fish in ponds is an important industry, and night soil, which is considered necessary for the development of the fish, is fed regularly to them. This practice, coupled with the fact that thin slices of raw fish are a popular delicacy, favors the widespread dissemination of the disease.[5]

In China and Korea the spread of the disease is favored by the infection of cattle, dogs and cats. Twenty-five per cent of the dogs in Peiping, China, and 8.5 per cent of the street dogs in Mukden, Manchuria, were found to be infected. Rats may also serve as reservoir hosts. The presence of the infection in animal hosts in North China, Manchuria and Korea is an indication of the danger of infection when uncooked or insufficiently cooked fish are eaten in these areas.[5]

Pathology.—The majority of adult worms live in the large bile ducts with the production of distention, dilatation and eventual thickening of these passages. Hoeppli made a detailed postmortem, histologic study of the livers of 66 Chinese who were infected with C. sinensis but who succumbed to other diseases.[12] He found fibrous thickening and dilatation of the larger bile ducts and increase in the periportal connective tissue in 49 cases. A definite cirrhosis, similar to Laennec's cirrhosis except for the presence of the parasite, was noted in only 1 case. In addition, Hoeppli observed proliferation of epithelium of the bile duct, eosinophilic infiltration and fatty changes in the hepatic cells. Involvement of the pancreas occurred in 11 per cent of the cases.

Helwig and Brown,[1e] in a study of 2 cases in which necropsies were performed, described fibrous connective tissue surrounding the dilated hepatic ducts. The spaces around the ducts were infiltrated with inflammatory cells, including eosinophils, neutrophils, moderate numbers of lymphocytes and plasma cells. The adult flukes were found in the dilated hepatic ducts but not in the gallbladder, cystic or common bile ducts. Miyaka found an adult worm in the center of a gallstone.[13] Otto [14] has described a catarrhal cholangitis associated with the occlusion of the larger biliary passages by sticky masses of Clonorchis ova. The reports of Katsurada, Mebius and Yamigima [13] indicate that in long-standing cases with repeated heavy infections, cirrhosis of the liver is not rare. If the disease is progressive, ultimately a true cirrhosis results in shrinkage of the liver with alterations of the architectural pattern, splenomegaly and ascites. The observations are those of cholangitic biliary cirrhosis. The patient of Favorite and Horneff [1d] had edema and ascites for six years, followed by dyspnea and cyanosis; at necropsy the observations were indistinguishable from those of Laennec's cirrhosis, except that the bile ducts were distended with numerous trematodes. Bercovitz [15] found a fatty cirrhosis in one of his cases.

Those who are most familiar with this disease have suggested that primary carcinoma of the liver may be related in some way to the presence of C. sinensis and the pathologic changes it produces in this organ. Hoeppli [12] has stated that it is the impression of some physicians in China that primary carcinoma of the liver is more frequent in the south of China than in the north and parallels the incidence of infection with Clonorchis, which is greater in the south of China. In a case reported by Swalm, Gault and Morrison [1b] an aspiration of the liver which was performed after death in a patient with clonorchiasis revealed interlobular cirrhosis and primary carcinoma of the liver.

REPORT OF CASES

Case 1.—A white Russian woman aged 34 complained of low grade fever for six years. She was born in Manchuria but had lived in China for fifteen years. For ten years prior to visiting the United States she had resided in Shanghai, where she had eaten fresh water fish. In 1942, one year after the onset of a low grade fever, she was told that she had an enlarged liver. In 1943 she had an episode of intense jaundice with dark urine and clay-colored stools. In 1944, because of fever and hepatomegaly, amebiasis was suspected and she was given twenty injections of emetine hydrochloride. Since then she continued to have frequent attacks of dull pain and tenderness in the right upper quadrant of the abdomen and elevations of temperature to 100 or 101 F.

Physical examination revealed a well developed, well nourished white woman in no distress. There were a few spider telangiectases on her cheeks and nose. The lungs were clear. There was a soft apical systolic murmur. The edge of the liver was palpable in the epigastrium. The spleen could not be felt.

The hemoglobin concentration of the blood was 15.5 Gm. per hundred cubic centimeters; the white blood cell count was 5,300. The differential count revealed 44 per cent polymorphonuclear neutrophils, 40 per cent lymphocytes, 4 per cent monocytes and 12 per cent eosinophils. Urinalysis did not reveal the presence of albumin or sugar. Several examinations of the stool by direct saline smear revealed numerous ova of C. sinensis and Trichuris trichiura. A stool flotation test, with zinc sulfate (33.3 per cent solution), was negative for protozoan cysts. The cephalin flocculation test gave a 2 plus reaction. The erythrocyte sedimentation rate (Linzenmeier) was normal. Blood agglutination reactions for Brucella abortus and Brucella melitensis were negative. Oral cholecystography, performed after the administration of iodoalphionic acid (priodax®), revealed fairly good visualization of the gallbladder. There was no evidence of any filling defect in this viscus, and biliary calculi were not demonstrated.

To treat the infection with C. sinensis, the woman was given 60 mg. of methylrosaniline chloride orally, three times a day, in the form of enteric-coated tablets (enseals®). She did not tolerate this medicament well and had to forego it for two or three days at a time because of nausea and diarrhea.

12. Hoeppli, R.: Histological Changes in the Liver of Sixty-Six Chinese Infected with Clonorchis Sinensis, Chinese M. J. **47**: 1125-1141, 1933.
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14. Otto, I. H.: Clinical Pathophysiological and Therapeutical Aspects of Human Clonorchiasis, Far East A. Trop. Med., Tr. Ninth Cong. **1**: 543-561, 1934.
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However, the use of the drug was associated with a prompt decrease in the number of Clonorchis ova in the stools, and several negative stools were obtained. There was also a decrease in eosinophilia from 12 per cent when the treatment was started to 3 per cent after six weeks. Symptomatically, the patient seemed somewhat better as a result of treatment. The hepatic tenderness disappeared, she had afebrile periods lasting several weeks, and she gained 5 pounds (2.3 Kg.).

On examination of the patient eight weeks after treatment was discontinued, the liver could be felt 1 fingerbreadth below the costal margin. The patient had eosinophilia (5 per cent) and her stools contained ova of C. sinensis.

CASE 2.—A woman aged 25, who had been in the United States for two months, was seen in the outpatient department of Mount Sinai Hospital. Her main complaint was epigastric pain of two years' duration. She was born in Germany, but since May 1939 she had lived in Shanghai. There she often tasted chopped fish prior to cooking it. In 1940 she had intermittent attacks of diarrhea, and she was told that she had "intestinal worms." In 1943 she contracted amebic dysentery, for which she was given emetine hydrochloride.

The recurrent epigastric pain, which had been present since 1946, appeared after meals and radiated to the back. The attacks of pain usually lasted about fifteen minutes. At times they were accompanied by periodic nausea and constipation, anorexia, weakness, insomnia and bitemporal headaches. Prior to hospitalization she had been treated with twelve injections of histidine monohydrochloride (larostidin®) without abatement of her symptoms.

Physical examination revealed a well developed and well nourished woman in no distress. There was tenderness in the epigastrium and in the lower part of the abdomen. The liver and spleen were not palpable. The blood pressure was 90 systolic and 60 diastolic.

The hemoglobin concentration of the blood was 11.6 Gm. per hundred cubic centimeters, and the red blood cell count was 3,560,000. The white blood cell count was 8,050, and the differential count revealed 53 per cent polymorphonuclear neutrophils, 33 per cent lymphocytes, 12 per cent eosinophils and 2 per cent monocytes. The urine was normal, and response to the Wassermann test was negative. The erythrocyte sedimentation rate was 11 mm. per hour (Westergren).

Blood chemical studies revealed an icterus index of 3 units, a negative van den Bergh reaction and a serum bilirubin level of 0.2 mg. per hundred cubic centimeters. Examination of the stool revealed ova of C. sinensis.

Cholecystographic study disclosed a gallbladder with a phrygian cap type of configuration, with good function and without evidence of calculus formation. Roentgenologic study after ingestion of a barium meal did not reveal evidence of abnormality in the esophagus, stomach or duodenum. The lateral aspect of the duodenal bulb was smoothly indented, presumably by the gallbladder.

The infection was treated with enteric-coated tablets of methylrosaniline chloride (60 mg. three times a day) for one month. Unfortunately, follow-up study was not possible.

CASE 3.—A man aged 34 who had been in the United States for three months was admitted to the second medical service (Dr. I. Snapper) of Mount Sinai Hospital because of abdominal distention of three years' duration. He was born in Germany and had lived in Shanghai from 1939 to 1948.

Soon after his arrival in Shanghai in 1939, he suffered from frequent soft bowel movements, on the average of six a day, accompanied by abdominal distention and dull periumbilical pain. There was occasional crampy pain in the right upper quadrant of the abdomen, radiating to the back. In 1944 he became jaundiced during an epidemic of hepatitis in Shanghai, and he had weakness, nausea, fever and clay-colored stools. In September 1946 severe diarrhea developed, and he experienced twenty to twenty-five nonbloody movements daily. On routine examination of the stool ova of C. sinensis were found, and the infection was treated with methylrosaniline chloride. It was stated that the patient had gallbladder disease as well. At that time the white blood cell count was 20,000, with 20 per cent eosinophils. After his arrival in the United States he continued to experience abdominal distention and cramps in the lower part of the abdomen. He stated that in Shanghai he had eaten fresh water fish regularly and that clonorchiasis was widespread there.

Physical examination revealed a well developed and well nourished man. The liver was palpable 1 to 2 fingerbreadths below the costal margin. The spleen was not felt. The blood pressure was 118 systolic and 72 diastolic.

The hemoglobin concentration of the blood was 17.0 Gm. The white blood cell count was 11,400. The differential count revealed 55 per cent polymorphonuclear neutrophils, 31 per cent lymphocytes, 10 per cent eosinophils, 2 per cent monocytes and 2 per cent basophils. The urine contained 2 to 6 white blood cells per high power field, and there was no bile. The urine urobilinogen determination was 1:64. The erythrocyte sedimentation rate was 15 mm. per hour (Westergren). The stool was guaiac negative and contained ova of C. sinensis. The fasting blood sugar level was 84 mg. and the urea nitrogen was 23 mg. per hundred cubic centimeters. Liver function tests revealed the following: sulfobromophthalein sodium, no retention; cephalin flocculation, 1 plus. The serum cholesterol determination was 219 mg. per hundred cubic centimeters. Blood agglutination reactions for typhoid, Salmonella and Shigella paradysenteriae were negative. The sigmoidoscope was passed a distance of 25 cm., and the mucosa was found to be normal.

A course of chloroquine diphosphate (in a dosage of 500 mg. a day) was given for four weeks, and two stool examinations toward the end of the treatment were negative for ova of C. sinensis. However, a subsequent stool examination, one month after treatment, revealed their presence.

CASE 4.—A white girl 4 years of age was admitted to the pediatric wards of Mount Sinai Hospital with a main complaint of nodding of the head of six months' duration. She had been born in Shanghai and had lived there until coming to the United States three months previously. She had had dysentery at 2 years of age. Six months prior to her admission to the hospital, rotation and roving of the eyes had developed. Later, she exhibited a peculiar mannerism of repeatedly dropping her head and raising it every ten or fifteen minutes, mainly in the mornings. There was a history of retarded development. She had no symptoms referable to the gastrointestinal tract. A routine stool examination before entry revealed ova of C. sinensis.

Physical examination revealed a child without distress. There was an erythematous rash on the extensor surface of the arms and thighs. The liver and spleen were not palpable.

The hemoglobin concentration of the blood was 12.4 Gm. per hundred cubic centimeters, and the white blood cell count was 7,400 with 46 per cent polymorphonuclear neutrophils, 48 per cent lymphocytes, 3 per cent monocytes and 3 per cent eosinophils. The urine contained an occasional pus cell. The stool culture showed atypical Escherichia coli. The serum agglutination tests were negative for B. abortus and B. melitensis. On microscopic examination, the stool and biliary drainage revealed ova of C. sinensis. The blood urea nitrogen determination was 11 mg. and the serum cholesterol was 420 mg. per hundred cubic centimeters, with cholesterol esters 250 mg. per hundred cubic centimeters. The cephalin flocculation reaction was negative.

The head nodding was not present during the hospital stay. A ten day course of enteric-coated tablets of methylrosaniline chloride (10 mg. three times a day) was given. Immediately following the treatment, two stool examinations failed to reveal the presence of ova of C. sinensis.

COMMENT

Each of the foregoing cases was considered as an example of mild infection with C. sinensis. Three of the patients had symptoms referable to the upper part of the abdomen that probably were the result of hepatic, biliary or duodenal dysfunction due to the presence of adult flukes and ova. One patient, a child (case 4), had no gastrointestinal symptoms. It is well known

that the majority of infected persons harbor few worms and present few symptoms. However, in heavier infections, perhaps as in cases 1, 2 and 3, there may be an irregular appetite, pain in the upper part of the abdomen, attacks of diarrhea and constipation, and loss of weight. In case 1 a prolonged low grade fever was the chief symptom. Chronic cholecystitis is often suspected and is not uncommon.[12] In Howard's case [3] calculous cholecystitis was present.

In advanced stages of the disease icterus, ascites and hepatosplenomegaly, the classic observations in hepatic cirrhosis, may appear. Episodes of jaundice may occur on the basis of biliary obstruction from adult worms in the common duct or as a result of attacks of acute cholangitis or hepatitis. Night blindness has been reported and is probably due to an associated vitamin A deficiency, as seen in chronic hepatic disease. In Crawford's case [4] pulmonary infiltrations consistent with a diagnosis of Löffler's syndrome were observed. Eosinophilia, noted in 3 of our cases, is generally present and is variable in amount. The eosinophil count may exceed 50 per cent. Leukocytosis is commonly observed, especially in early cases.[4]

The diagnosis is verified by the finding of the characteristic ova of C. sinensis in the feces or in the fluid obtained by duodenal drainage.[1e] In the search for ova concentration of the stool should be attempted by sedimentation technics, since the ova are heavy and might be missed in material obtained by flotation.

The chemotherapy of clonorchiasis is not particularly satisfactory, because the parasite is difficult to eliminate with the available drugs. Methylrosaniline chloride is the drug of choice in the treatment of early cases.[1e] It is given to adults in doses of 60 to 120 mg. three times a day for periods of two to four weeks in the form of enteric-coated tablets. In case 1, with a careful follow-up period of three months, the use of this drug was followed by clinical improvement, a decrease in eosinophilia and temporary disappearance of Clonorchis ova from the stools. In cases resistant to several courses of methylrosaniline chloride, a course of intravenous injections of sodium antimonyl tartrate may be tried.[1e] The drug is given intravenously on alternate days in the form of a freshly prepared 2 per cent solution. The initial dosage of 60 mg. should be doubled on the third day (120 mg.), and then this dosage should be injected every other day until a total of 1.3 to 1.8 Gm. has been given. We have had no personal experience with this method of treatment.

In 1 instance, case 3, chloroquine diphosphate was used to determine whether or not it had any clonorchicidal value. This drug is heavily concentrated in the liver and, in addition to its antimalarial activity, is said to possess amebacidal activity in amebic hepatitis. It failed to eliminate Clonorchis ova from the stools, although it was given for a period of three weeks.

SUMMARY

1. Four cases of infection with Clonorchis sinensis were observed in white emigrants from Shanghai, China, who were residing in New York City.

2. A brief résumé of the epidemiologic and clinical features of this disease is presented.

3. Chloroquine diphosphate was used in 1 patient but had no influence on the infection with C. sinensis.

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SEPTICEMIA DUE TO BACTEROIDES

Aureomycin Hydrochloride Therapy in Two Cases Due to Bacteroides Funduliformis

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A review of the literature reveals that Bacteroides-caused infections in human beings are not infrequent. It is our impression that the incidence of infections and septicemia due to Bacteroides is probably much greater than that reported. These organisms are normal inhabitants of the mucous membranes of the body, and injury of mucosal surfaces, such as may occur in a ruptured appendix, may result in localized or widespread infections due to Bacteroides. If the blood stream is invaded, septicemia may result with metastatic abscesses, and the outlook becomes exceedingly grave.

Eighteen cases of Bacteroides-caused infection have been observed at John Gaston Hospital in the past five years. This report is concerned only with 2 cases of septicemia due to Bacteroides funduliformis treated with aureomycin hydrochloride.

Castellani and Chambers [1] in 1919 proposed the designation Bacteroides for a large group of anaerobic, nonsporulating bacilli. The 1939 edition of "Bergey's Manual of Determinative Bacteriology" [2] classified the gram-negative members of the anaerobic, non-spore-forming bacilli under the genus Bacteroides.

The prognosis of septicemia due to Bacteroides is extremely poor. In 1941 Brown, Williams and Herrell [3] reported the recovery of 1 of 15 patients with septicemia due to B. funduliformis at the Mayo Clinic. In an additional 10 cases of septicemia due to Bacteroides collected from the literature by Thompson and Beaver [4] only 4 patients recovered. In 1947 Ruys [5] related the histories of 4 patients with septicemia due to Bacteroides; only 1 survived after a prolonged febrile illness. Six cases of septicemia due to Bacteroides have been observed at John Gaston Hospital in the past five years. In the first 4 the patients died in spite of chemotherapy, antibiotics and supportive treatment. The last 2 recovered under treatment with aureomycin hydrochloride.

REPORT OF CASES

CASE 1.—*History.*—A Negro woman aged 69 was hospitalized Dec. 21, 1948 with a history of purulent nasal discharge, cough, headache, sore throat, chills, fever, nausea and vomiting of three weeks' duration. The nasal discharge had been excessive, thick and greyish yellow, and it was intermittently streaked with blood. Chills and fever occurred daily. There was no history of abdominal pain, but malaise and lethargy were noted.

Physical Examination.—The temperature was 103.4 F., the pulse rate 105 per minute, the respiratory rate 18 per minute and the blood presure 180 mm. of mercury systolic and 120 mm. diastolic. The heart was enlarged. The abdomen was distended

Aureomycin hydrochloride was provided for this study by Lederle Laboratories, Division of the American Cyanamid Company.

Dr. R. R. Overman, Department of Physiology, University of Tennessee College of Medicine, performed the blood chemical studies.

From the Divisions of Medicine and Pathology and Bacteriology, University of Tennessee College of Medicine, and the John Gaston Hospital.

1. Castellani, A., and Chambers, A. J.: Manual of Tropical Medicine, ed. 3, New York, William Wood & Company, 1919.

2. Bergey, H. D.: Bergey's Manual of Determinative Bacteriology: A Key for the Identification of Organisms of the Class Schizomycetes, Baltimore, Williams & Wilkins Company, 1934, pp. 404-413; 1939, pp. 556-570.

3. Brown, A. E.; Williams, H. L., and Herrell, W. E.: Bacteroides Septicemia, J. A. M. A. **116**: 402-404 (Feb. 1) 1941.

4. Thompson, L., and Beaver, D. C.: Bacteremia Due to Gram-Negative Organisms of the Genus Bacteroides, M. Clin. North America **15**: 1611-1626, 1932.

5. Ruys, A. C.: Bacteroides Funduliformis, J. Path. & Bact., **59**: 313-316, 1947.

and tympanitic but not tender. There was no abdominal mass. The day after admission severe pain developed in the right upper quadrant with tenderness in that area. Moderate icterus of the scleras was observed. Five days after admission the icterus was pronounced, the abdomen distended, peristalsis absent and rebound tenderness decided. The patient continued to have a septic temperature. The liver was palpable 2 fingerbreaths below the costal margin on the right side and was tender. Slight nuchal rigidity was noted.

Treatment and Course.—Two blood cultures for B. funduliformis were positive. The patient had shown no response to treatment with penicillin, sulfadiazine or streptomycin. It was decided to investigate the therapeutic effect of aureomycin. Sensitivity tests revealed that the growth of B. funduliformis from the patient's blood was not inhibited by penicillin in a concentration of 2 units per cubic centimeter, by streptomycin in a concentration of 250 micrograms per cubic centimeter or by sodium sulfadiazine in a concentration of 125 mg. per hundred cubic centimeters, but growth was entirely inhibited by aureomycin hydrochloride in a concentration of 13 micrograms per hundred cubic centimeters.

Oral administration of aureomycin was impossible in this case because of the existing ileus. Aureomycin therapy was begun eleven days after admission. The agent was given intramuscularly in distilled water to which procaine hydrochloride had been added. In view of the Herxheimer-like reactions described by Spink and associates[6] in the treatment of brucellosis, it was decided to give small initial doses. The following dosage was given: 750 mg. in divided doses during the first twenty-four hours, 2 Gm. during the second twenty-four hours, 4 Gm. during the third twenty-four hours and 5 Gm. a day thereafter. With the institution of aureomycin therapy, all other antibiotics and chemotherapy were discontinued. No reaction occurred to this medication.

Fifteen days after admission the abdomen was soft, peristalsis was audible, the liver was barely palpable and abdominal tenderness had essentially disappeared. Seventeen days after admission (forty-eight hours after use of the Wangensteen suction tube was discontinued) oral administration of aureomycin was begun. However, the intramuscular route was resumed when it was observed that the blood level of aureomycin had fallen 60 per cent.

On the twenty-fourth day after admission of the patient there developed acute myocardial decompensation with decided dyspnea, tachycardia, pulmonary edema, hepatomegaly and edema of the lower extremities. Excellent response was obtained with digitalization, ammonium chloride, mercurial diuretics and the Karell diet. By the twenty-eighth day all evidence of decompensation had disappeared. On the twenty-sixth day the dosage of aureomycin hydrochloride was reduced to 500 mg. orally every six hours.

The septic type of temperature disappeared on the fourth day of aureomycin therapy, and the temperature gradually returned to normal. From the twenty-sixth day after admission the patient had no complaints aside from severe weakness and lethargy. She had a completely negative attitude. It was considered that this was the result of a severe infection superimposed on already existent cerebral arteriosclerosis. The spinal fluid was clear and contained no cells. Neurologic examination revealed normal conditions. Therefore the Levine tube was repassed on the thirty-first day and formula feeding was resumed. Supportive treatment consisted of repeated small blood transfusions, vitamins, liver extract, ferrous sulfate and intravenous amigen.®

In view of ten negative blood cultures, together with clinical and physical evidence of improvement, aureomycin therapy was discontinued after the patient had received 75.45 Gm. of the drug. Following this, the temperature rose to show a daily spike of about 101 F. for the ensuing six days. It then became normal and remained so. Because of the extremely low plasma potassium level (3 milliequivalents per liter), 3 Gm. of potassium chloride were given daily beginning on the forty-second day.

On the forty-sixth day there was striking mental improvement. From this date the patient was afebrile, talkative, well oriented and desirous of going home. The patient was discharged on the fifty-ninth day after admission.

Laboratory Data.—The white blood cell count varied from 35,100 to 11,250 and the red from 3,150,000 to 4,850,000 per cubic millimeter; the hemoglobin level from 8.5 to 12.5 Gm. per hundred cubic centimeters; the hematocrit reading from 21 to 41 per cent; the one minute serum bilirubin determination from 12.2 to 0.8 mg. and the total serum bilirubin from 19.4 to 1.0 mg. per hundred cubic centimeters; the twenty-four hour urine urobilinogen level from 64.6 to 6.6 Ehrlich units; sulfobromophthalein sodium retention from 32 to 7 per cent; total plasma protein from 5.8 to 6.6 Gm. with albumin from 2.9 to 3.6 Gm. and globulin from 2.8 to 3.0 Gm. per hundred cubic centimeters; the sedimentation rate (Wintrobe) from 70 to 18 mm. in an hour; nonprotein nitrogen from 93 to 28 mg. per hundred cubic centimeters. Repeated spinal fluid examinations were normal; urinalyses revealed 1 plus albumin. The highest blood aureomycin level obtained was 8 micrograms per hundred cubic centimeters.

CASE 2.—*History.*—A Negro woman aged 35 was hospitalized Jan. 25, 1949 with a history of illness for three weeks. The onset was marked by upper abdominal pain, nausea and vomiting. The pain lasted four to five days, but the vomiting persisted. Shortly after the onset of this illness, intermittent chills with a high elevation of temperature were noted. For two weeks prior to admission a nonproductive cough had been present. For one week prior to admission the patient had been given 300,000 units of penicillin daily by her physician.

Physical Examination.—Examination on admission revealed a temperature of 99.6 F., a pulse rate of 110 per minute, a respiratory rate of 28 per minute and blood pressure of 120 mm. of mercury systolic and 86 mm. diastolic. There was a mild hyperemia of the nose and throat. There was moderate rigidity in the right upper quadrant of the abdomen and in the epigastric area. Tenderness was noted in these areas and in the right lower quadrant. The liver, kidney and spleen could not be palpated. There was no abdominal mass. Pelvic examination revealed essentially normal conditions.

Treatment and Course.—Shortly after admission the patient became icteric; the liver became palpable and tender. In spite of massive doses of penicillin and streptomycin, together with repeated blood transfusions, the patient had a septic type of temperature with a daily spike to 105 or 106 F. Two positive blood cultures for Streptococcus fecalis and for B. funduliformis were obtained. At the height of fever, a third blood culture was positive for B. funduliformis only. On the fifteenth day after admission, penicillin and streptomycin therapy were discontinued; aureomycin therapy was instituted following sensitivity tests, which showed that the growth of B. funduliformis was not inhibited by penicillin 2 units per cubic centimeter or by streptomycin 250 micrograms per cubic centimeter or by sulfadiazine 125 mg. per hundred cubic centimeters but was inhibited by aureomycin hydrochloride 12 micrograms per cubic centimeter. It had previously been shown that growth of Str. fecalis was inhibited by penicillin 0 12 units per cubic centimeter or by streptomycin 1.06 micrograms per cubic centimeter.

The patient was given 750 mg. of aureomycin hydrochloride by mouth in divided doses during the first twenty-four hours, 2 Gm. during the second twenty-four hours, 4 Gm. during the third twenty-four hours and 5 Gm. a day thereafter. She was also given a high protein and high carbohydrate diet with supplementary vitamins. The patient responded dramatically. She became afebrile on the fifth day of aureomycin therapy and remained so. Studies of the blood chemistry prior to the institution of aureomycin therapy revealed a pronounced reduction of plasma potassium (3.3 milliequivalents per liter); therefore 3 Gm. of potassium chloride were given daily for four days. Although nausea persisted in association with the administration of aureomycin, the persistent vomiting disappeared. Dehydration, sweating, lethargy, weakness and anorexia rapidly

6. Spink, W. W.; Braude, A. I.; Castaneda, M., and Goytia, R.: Aureomycin Therapy in Human Brucellosis Due to Brucella Melitensis, J. A. M. A. **138**:1145 (Dec. 18) 1948.

subsided. On the eighth day of aureomycin therapy the dosage was reduced to 4 Gm. The following day the twenty-four hour dosage was further reduced to 2 Gm. On the fourteenth day administration of this antibiotic was discontinued, as the patient was asymptomatic, showed no physical evidence of disease, had been afebrile for nine days, and had shown five negative blood cultures. The patient was discharged on the thirty-sixth day after admission.

Laboratory Data.—The white blood cell count varied from 26,900 to 6,550 and the red from 2,160,000 to 3,870,000 per cubic millimeter; the hemoglobin level from 7.5 to 12 Gm. per hundred cubic centimeters; the hematocrit reading from 22 to 34 per cent; the twenty-four hour urine urobilinogen level from 47.6 to 2.5 Ehrlich units; the one minute serum bilirubin determination from 0.3 to 1.5 mg. and the total serum bilirubin from 2.8 to 0.9 mg. per hundred cubic centimeters; sulfobromophthalein sodium retention from 30 to 8 per cent; the total plasma protein from 6.7 to 8.2 Gm. with albumin from 2.7 to 3.2 Gm. and the globulin from 5.0 to 3.2 Gm., per hundred cubic centimeters; the cephalin flocculation reading from 4 plus to 1 plus at twenty-four hours and from 4 plus to 1 plus at forty-eight hours; the sedimentation rate (Wintrobe) from 76 to 23 mm. in one hour. Repeated urinalyses were normal. The nonprotein nitrogen level remained about 30 mg. per hundred cubic centimeters. A spinal fluid examination was normal. The highest aureomycin blood level was 8 micrograms per hundred cubic centimeters.

COMMENT

Bacteroides infections are more frequent than is generally recognized. Eighteen cases have been observed at the John Gaston Hospital in the past five years. Six of these were cases of septicemia due to Bacteroides. It would appear that many cases are not diagnosed because of the scarcity of information concerning these organisms and because of the failure to look for anaerobic bacteria. Septicemia due to Bacteroides, especially the funduliformis type, is exceedingly severe, with the majority terminating fatally. Until the present there has been no specific or adequate therapy for this condition. The excellent response to aureomycin hydrochloride therapy in 2 recent cases of septicemia due to B. funduliformis is therefore most encouraging.

In both cases supportive therapy included repeated small blood transfusions, multivitamins, ferrous sulfate, liver extract and a special diet high in protein and carbohydrate. The blood chemical studies in both instances revealed a pronounced reduction in the plasma potassium level, which was corrected by the oral administration of potassium chloride.

In vitro sensitivity tests demonstrated that growth of the B. funduliformis isolated from the patient's bloodstream would not be affected greatly by sulfadiazine, penicillin or streptomycin therapy. However, growth was inhibited by aureomycin hydrochloride. In vitro studies failed to show the development of resistant organisms after prolonged treatment with aureomycin. Other than moderate nausea, significant toxic reactions to the drug were not observed.

SUMMARY

Two cases of septicemia due to Bacteroides funduliformis have been successfully treated with aureomycin hydrochloride. The following dosage was used: 750 mg. in the first twenty-four hours, 2 Gm. in the second twenty-four hours, 4 Gm. in the third twenty-four hours and 5 Gm. a day thereafter until definite evidence of recovery was noted.

Significant toxic reactions were not observed in the use of aureomycin hydrochloride.

MATERNAL DEATHS FROM COCCIDIOIDOMYCOSIS

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Disseminated coccidioidomycosis as a cause of maternal deaths has not been reported previously. We are reporting 4 fatal cases, while a fifth case is still being observed. Unquestionably, other fatal and unrecognized cases have occurred in this endemic area, or the subjects have migrated to other areas, with a final diagnosis of maternal death due to meningitis of unspecified cause.

In Kern General Hospital for the year 1948, there were 4 maternal deaths in 2,410 deliveries; of these deaths, 3 were due to disseminated coccidioidomycosis. It is interesting to note that during the same year no mothers died of tuberculosis, either in this hospital or in Kern County. We feel that other cases will be discovered and reported and that the pathogenesis of disseminated coccidioidomycosis as a fatal complication of pregnancy and as a cause of maternal death will become well known.

REVIEW OF LITERATURE

An exhaustive search of the literature of coccidioidal granuloma has failed to lead to the discovery of a single publication concerning disseminated coccidioidomycosis occurring during pregnancy. Forbus and Bestebreurtje [1] published a comprehensive review of the literature with an excellent exposition of the pathogenesis of coccidioidomycosis. In 1936, Abbott and Cutler [2] published a review of the pathologic studies of chronic coccidioidal meningitis and presented a bibliography of all reported cases of coccidioidal meningitis. They divided meningitis into two general forms: (1) meningitis associated with granulomas in other organs, and (2) primary chronic coccidioidal meningitis. Three of our 4 cases of coccidioidal meningitis fall into the first category and 1 in the second.

REPORT OF CASES

CASE 1.—E. N., a 37 year old Negro gravida II, para I, was admitted to the hospital on April 17, 1944, complaining of pain in the abdomen and in the right hip. An abscess on her right hip was finally diagnosed, and incision and drainage was done on April 26. Labor began on May 9, and she delivered a stillborn infant (sex unnoted) spontaneously. The heart tones disappeared during labor. Her postpartum condition became critical, and she died three days following delivery.

Laboratory Data.—Results of Mantoux, coccidioidin and brucellergin skin tests were negative. Biopsy material from the abscess showed Coccidioides imitis. Examination of the spinal fluid revealed 810 cells per cubic millimeter, 95 per cent of which were polymorphonuclear leukocytes. No serologic tests were performed. A roentgenogram showed an osteolytic area

The complement fixation and precipitin tests were done in the laboratory of Dr. C. E. Smith, School of Medicine, Stanford University.

Dr. Ralph C. Benson, University of California Hospital, and Dr. B. O. Raulston, Dean, School of Medicine, University of Southern California, assisted in the preparation of this paper.

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J. W. Birsner, M.D., was formerly Chief Resident of Radiology, Kern General Hospital, and is now attending in Radiology at Kern General Hospital.

1. Forbus, W. D., and Bestebreurtje, A. M.: Coccidioidomycosis: A Study of Ninety-Five Cases of the Disseminated Type with Special Reference to the Pathogenesis of the Disease, Mil. Surgeon **99**: 653-719 (Nov.) 1946.

2. Abbott, K. H., and Cutler, O. I.: Chronic Coccidioidal Meningitis, Review of Literature and Report of Seven Cases, Arch. Path. **21**: 320-330 (March) 1936.

in the crest of the right ileum. The autopsy disclosed microscopic and macroscopic evidence of disseminated coccidioidomycosis in the skin, lungs, mediastinal nodes, meninges, spleen, pancreas, kidneys, thyroid and bones. Neither the fetus nor the placenta were mentioned in the clinical chart or in the autopsy report.

CASE 2.—M. E. B., a 31 year old white gravida III, para III, was admitted to the hospital on Jan. 29, 1948, forty-eight hours post partum. Her past history indicated that she had had "erythema nodosum due to Coccidioides" in January 1946.

She had been admitted to another hospital with a history of influenza for one week prior to delivery and with complaints of severe headache and soreness of the neck for twenty-four hours. At the time of delivery, her temperature was 102 F. and she complained of a stiff neck. Her spontaneous delivery was uneventful. Examination of spinal fluid shortly before her transfer showed 573 white blood cells per cubic millimeter, with 60 per cent polymorphonuclear cells, 34 per cent lymphocytes and 6 per cent eosinophils. At the time of admission, examination showed a somewhat confused woman whose neck was stiff and whose uterus extended 12 cm. above the symphysis.

The patient's course in the hospital was marked by episodes of unconsciousness, from which she would more or less completely recover. She became irrational and disoriented after about a month of hospitalization. During this time, she received both penicillin and streptomycin in large doses. Two cutaneous facial ulcerative lesions appeared from which biopsy specimens were taken. They showed cutaneous coccidioidomycosis.

A noteworthy description by the neurologic consultant, Dr. J. M. Nielsen, on March 2, 1948, is quoted in part: "Her pupils were large, the left being larger than the right. The left pupil reacted poorly to light. Both disks were choked. There was decided rigidity of the neck and pronounced hypersensitivity throughout the body. There was complete loss of sphincter control. Both legs were paralyzed and one drawn up in flexion. There was some loss in strength of both upper limbs. Quick response to pinprick existed throughout the body, including the fourth and fifth sacral segments, which indicated that the lateral spinothalamic tracts were intact. However, the paralysis and the loss of sphincter control indicated that the central portion of the spinal cord was out of function. This constituted a meningeal picture." The patient died on April 18.

Laboratory Data.—On January 29, a spinal tap showed 573 white blood cells per cubic millimeter, with 60 per cent polymorphonuclear cells, 34 per cent lymphocytes and 6 per cent eosinophils. Examination of the spinal fluid on February 4 showed 88 white blood cells, with 53 per cent polymorphonuclear cells and 47 per cent lymphocytes. On February 26, a roentgenogram of the lungs and the skull showed no abnormalities. The spinal fluid contained 290 white blood cells, with 70 per cent polymorphonuclear cells and 30 per cent lymphocytes. On February 27 a biopsy of the lesion of the right nasolabial fold revealed disseminated coccidioidomycosis. On February 28, the results of the serum complement fixation tests for Coccidioides were strongly positive through dilution 1:4. No precipitins were noted. From the observations it was concluded that an old coccidioidal infection existed, with the notation that coccidioidal meningitis has been known to occur with low titer serologic reactions.

On March 13 the results of complement fixation tests of the blood serum were positive through dilution 1:4. It was noted that, while the titer of complement fixation was not high, in conjunction with the increased spinal fluid cell count it would seem to establish the diagnosis of coccidioidal meningitis.

On March 24 the complement fixation titers of the blood serum were weakly positive through dilutions 1:4. It was concluded that the continued high cell count was diagnostic, with the comment that some patients with meningitis have low complement-fixing titers. On April 14 the spinal fluid cell count was 25 white blood cells, with 60 per cent polymorphonuclear cells and 40 per cent lymphocytes. Results of all serologic tests of the spinal fluid were negative. Permission for autopsy was refused.

Infant.—The infant was a well developed term baby who gained well from birth.

CAES 3.—B. G. S., a 28 year old Negro gravida II, para I, whose expected date of confinement was Sept. 27, 1948, was admitted to the hospital on July 23, complaining of a headache of twelve hours' duration. Examination revealed only a temperature of 101 F. and a stiff neck. All reflexes were normal. Examination of the spinal fluid showed 1,060 white blood cells per cubic millimeter, with 94 per cent polymorphonuclear cells. Her white blood cell count was 9,000, with a normal Schilling count. A roentgenogram of the chest taken on August 2 showed "confluent bronchopneumonia, cause unspecified." On August 4, after her membranes ruptured spontaneously, she delivered a normal premature male infant weighing 4 pounds 8 ounces (2,041 Gm.). The patient died the following day. Pathologic examination of the placenta revealed no abnormalities.

In summary, postmortem examination proved the existence of a disseminated form of coccidioidomycosis involving the lungs, mediastinal nodes, meninges, spleen, adrenals and kidneys. Results of coccidioidin precipitin tests and complement fixation tests were strongly positive and were interpreted as indicative of a "progressive disseminated coccidioidal infection."

The Infant.—The infant was an apparently normal premature male who gained until his twenty-fifth day of life, at which time he vomited a feeding and aspirated some of the formula. He died within a few hours. An autopsy showed atelectasis, prematurity and bronchopneumonia. Postmortem complement fixation tests for coccidioidomycosis showed weak titers, which were interpreted as evidence of passive transfer of antibodies. No microscopic or macroscopic evidence of any form of coccidioidomycosis was found.

CASE 4.—E. M., a 34 year old white gravida V, para I, with three abortions, was admitted to the hospital on Aug. 24, 1948, and had complained of a stiff neck and frontal headache for one day. On April 16, she was noted to have had a positive tuberculin (3 plus) and a negative coccidioidin skin reaction. A chest film showed "increased bronchial markings consistent with pulmonary coccidioidomycosis." The patient's last menstrual period was in February 1948. The results of the physical examination were essentially normal except for a positive Babinski sign on the right and a stiff neck. While in the hospital, she continued to complain of a severe headache, which was occasionally accompanied with vomiting. On October 2, her pregnancy terminated in a spontaneous delivery of an apparently normal mature male infant. The patient's condition did not improve, and she was discharged to private care on November 4.

Laboratory Data.—On August 24, a lumbar puncture revealed 124 cells, with 21 polymorphonuclear cells and 72 lymphocytes. On August 28 the result of the coccidioidin skin test was strongly positive; the result of the complement fixation test was negative but of the precipitin test positive through dilutions of 1:10. The conclusion drawn from this test was that there was a "currently active coccidioidal infection acquired in the not too distant past."

The roentgenogram of the chest on August 30 was normal. On September 13 a spinal puncture showed a cell count of 140, with 2 per cent polymorphonuclear cells and 98 per cent lymphocytes. On September 22, the result of the complement fixation test in dilution of 1:2 was positive. The reaction to the precipitin test was strongly positive undiluted.

On October 2, the spinal puncture showed 157 cells, with 8 per cent polymorphonuclear cells and 92 per cent lymphocytes. The complement fixation reaction of the blood serum was strongly positive in dilution of 1:2 and positive in dilution of 1:4. The reaction to the precipitin was positive through a dilution of 1:10. On November 3, the result of the complement fixation test was positive in dilutions through 1:16 and the precipitins were positive through dilutions of 1:40. On November 4, the lumbar puncture showed 129 cells, with 8 per cent polymorphonuclear cells and 92 per cent lymphocytes.

Infant.—The child was an apparently normal healthy male who gained well during his hospital stay. A complement fixation test made at birth from the cord blood showed a positive reaction through a dilution of 1:4.

On November 5 the reaction was doubtful in dilution of 1:2. This was interpreted as being suggestive of passive transfer of antibodies through the placenta. Pathologic examination of the placenta showed no evidence of coccidioidal granuloma.

CASE 5.—B. T. B., a 27 year old Negro gravida IV, para II, with one abortion, was first seen in the Prenatal Clinic on December 10, during her thirty-ninth week of gestation. On December 25, she returned to the Emergency Clinic complaining of weakness in the left arm and pain in the left side of the chest for two weeks.

Physical Examination.—The blood pressure was 95 systolic and 60 diastolic. The patient's neck was stiff to motion in any direction. Her lungs produced only a few rales in both bases. The uterine fundus was about 4 cm. below the costal margin, and the fetal heart tones were present. She was admitted to the hospital with a diagnosis of "possible poliomyelitis." Her course in the hospital was marked by slowly developing respiratory distress and coma. Between December 26 and December 27, the fetal heart tones disappeared, and the patient died undelivered on December 27.

Laboratory Data.—A roentgenogram of the chest, May 27, 1947, was normal. The Kahn reaction of the blood was positive. On Dec. 10, 1948 the hemoglobin was 10.5 Gm.; the blood type was revealed as Rh positive, and the Kahn reaction was positive. From a roentgenogram of the chest, reported as "suspicious," pathologic changes in the lungs were suspected. On December 24, a roentgenogram of the chest showed "possible miliary tuberculosis."

Autopsy.—Postmortem examination of the patient revealed previously unsuspected disseminated coccidioidomycosis of the lungs, spleen, kidneys and adrenals. The meninges were not diseased. Examination of the tubes, ovaries, uterus and placenta showed no abnormalities. The fetus showed no evidence of coccidioidomycosis.

COMMENT

One of us (J. W. B.) started this study when he discovered that in case 1 inadequate analysis had been made at the postmortem examination. We were struck with the possibility that placental coccidioidal granuloma might occur with subsequent infection of the fetus. We are familiar with the similarity between coccidioidal granuloma and tuberculosis, and we are familiar with the work of Loewenstein [3] in congenital tuberculosis. Loewenstein, through injection of maternal and fetal (cord) blood into guinea pigs, conclusively demonstrated bacteremia of Mycobacterium tuberculosis in both mother and child. Tuberculosis of the placenta accounted for the bacteremia.

Coccidioidomycosis differs from tuberculosis in that the kidneys, the fallopian tubes and the prostate are the only portions of the genitourinary tract observed to have been involved. There was an absence of the disease in the genital tract in cases 1, 2, 3 and 5. All the other organ systems except the gastrointestinal tract were extensively diseased. It appears that this feature, in the light of the foregoing statement, carries considerable significance. If the uterus and endometrium have never been involved in coccidioidomycosis, then congenital coccidioidomycosis, unlike congenital tuberculosis, probably has never been observed.

In cases 2, 3 and 4, strong evidence exists in the weak and progressively diminishing fetal coccidioidin complement-fixing titers, in the normal placentas and in the normal growth and development of the infants, that a granuloma did not develop in the placenta. Consequently, congenital coccidioidomycosis did not become manifest. There was no postmortem evidence of congenital transmission in case 5.

Case 3 is included in this paper because, in our experience, primary coccidioidal meningitis has been a uniformly fatal disease despite all treatment, and it is expected that the patient in this case, too, will die. A review of the literature substantiates this impression.

It is recommended that, in a known endemic area for coccidiodomycosis, all pregnant patients with symptoms of the upper part of the respiratory tract have skin tests and be carefully followed for possible dissemination. It is also recommended that all pregnant patients with signs and symptoms of meningeal involvement or meningitis be carefully studied for infection with Coccidioides.

SUMMARY AND CONCLUSIONS

Disseminated coccidioidomycosis in pregnancy, fatal in 4 cases reported herein, in 3 with coccidioidal meningitis and 1 without meningeal involvement, is reported as a new cause of maternal deaths.

No evidence exists that coccidioidomycosis imitates tuberculosis with respect to congenital transmission.

ADDENDUM

Dr. L. H. Winer, Beverly Hills, Calif., permitted us to examine histologically a human placenta that contained typical granulomas of coccidioidomycosis. We have been unable to learn any further details of the subject or her infant.

3. Loewenstein, E.: Congenital Tuberculosis: Its Clinical Importance, Am. Rev. Tuberc. **51**: 225-230 (March) 1945.

Clinical Notes, Suggestions and New Instruments

RADIOACTIVE IODINE (I^{131}) IN THE DIAGNOSIS OF LINGUAL THYROID

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The specific affinity of functioning thyroid tissue for iodine is the rationale for the use of radioactive iodine in tracer doses to study iodine metabolism and the physiology of the human thyroid gland. The pioneer work of Hamilton [1] and Hertz [2] initiated this type of investigation.

Radioactive iodine was given to a girl 11 years of age in tracer amounts to aid in the preoperative evaluation of a suspected lingual thyroid, subsequently proved to be such microscopically and by radioautograph. This case is reported as another example of the value of radioactive tracer technics in the surgical management of thyroid abnormalities. Feitelberg and associates [3] have reported the use of radioactive iodine in the study of a lingual thyroid, but their subject did not have operative intervention.

Persistence of thyroid tissue at the site of its origin, the foramen cecum at the base of the tongue, is an uncommon

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From the Department of Surgery and the Surgical Research Laboratory of the Medical College of Virginia.
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1. Hamilton, J. G.: Rates of Absorption of Radioactive Isotopes of Sodium, Potassium, Chlorine, Bromine and Iodine in Normal Human Subjects, Am. J. Physiol. **124**: 667, 1938.
2. Hertz, S.; Roberts, A., and Evans, R. D.: Radioactive Iodine as Indicator in Study of Thyroid Physiology, Proc. Soc. Exper. Biol. & Med. **38**: 510, 1938.
3. Feitelberg, S.; Kaunitz, P. E.; Wasserman, L. R., and Hohalem, S. B.: The Use of Radioactive Iodine in the Diagnosis of Thyroid Disease, Am. J. M. Sc. **216**: 129, 1948.

anomaly which is amenable to surgical treatment. Montgomery [4] in a review of the literature in 1936 found 231 reports on lingual thyroid but considered only 144 as authentic. He credited the first authenticated case to Bernays (1888). Buckman [5] reported 242 such cases in a similar review of the literature in 1936. The recent review of Goetsch [6] reported 3 cases of lingual thyroid substantiated by histologic section. The reviews of Montgomery and Buckman include excellent discussions of the historic aspect of lingual thyroid, the development of the tongue and the thyroid gland, and the embryologic malformation which results in the development of the lingual thyroid.

The present report purposely excludes these aspects of lingual thyroid and directs attention to the use of radioactive iodine and the radioactive tracer technic as an aid in the preoperative evaluation of this thyroid anomaly.

REPORT OF CASE

P. P., a white girl, 10 years of age, was admitted to the Medical College of Virginia, Hospital Division, on Aug. 2, 1948 complaining of a lump in the tongue. When the patient was 4 years of age, a small "cyst" was noted at the base of the tongue during tonsillectomy. The parents were advised to keep the mass under surveillance and to return for consultation if the mass increased in size or began to give symptoms of obstruction. The patient remained asymptomatic for a period of approximately six years, but about six months prior to admission the child's mother noticed that she talked "as if she had something in her mouth." The patient had slight difficulty in swallowing, but there was no serious dysphagia.

On physical examination, the patient was well developed for her age and was alert. The observation of greatest significance was an oval red mass measuring approximately 3 by 2 by 2 cm. at the base of the tongue at the site of the foramen cecum. When the tongue was protruded, the mass was easily visualized, being large enough to partially occlude the pharynx. The thyroid gland was not palpable in the normal position, and each cervical tracheal ring could be easily felt; so it was assumed that the entire thyroid had remained at the base of the tongue. The remainder of the physical examination revealed essentially normal conditions.

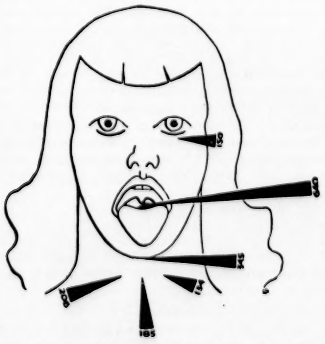

Fig. 1.—Diagrammatic illustration of lingual thyroid and concentration of radioactive material (expressed as counts per minute).

The results of the blood count, urinalysis and cholesterol determinations were all within normal limits. Two basal metabolic studies gave values of plus 24 and minus 10 per cent. Both were considered unsatisfactory due to the patient's difficulty in breathing while the test was being performed. A roentgenogram of the chest disclosed no abnormalities.

A tentative diagnosis of lingual thyroid was made, and surgical removal was advised. Although no thyroid gland

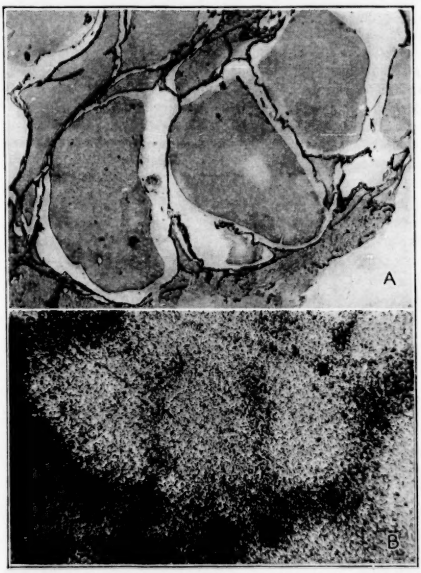

Fig. 2.—Photomicrograph (*A*) of hematoxylin and eosin-stained section and radioautograph (*B*) of tissue removed, magnification approximately × 20).

was palpable in the normal position, this could not be considered conclusive evidence that none existed at that site; and it was important to determine whether the lingual mass contained all of the functioning thyroid tissue. This problem could have been solved by surgical exploration of the thyroid area, but this proved unnecessary following the use of radioactive iodine (I^{131}) in the following manner.

A tracer dose of 10 microcuries of radioactive iodine obtained from the Oak Ridge National Laboratory as I^{131} in sodium bisulfite solution, p_H 9.0, was given orally. A Geiger-Mueller tube 2.22 cm. (⅞ inch) long by 0.95 cm. (⅜ inch) in diameter, enclosed in a specially designed lead container to columnate the gamma rays given off by the radioactive iodine, was used to determine the localization of this material in the mass at the base of the tongue and in the zone in which the thyroid is normally located. The activity in the regions studied (expressed as counts per minute) was determined seven hours after oral administration of the tracer dose and is shown diagrammatically in figure 1.

On the basis of these results, it was concluded that the mass at the base of the tongue was functioning thyroid tissue and that the patient had little, if any, functioning thyroid tissue in the normal location.

The following morning a subtotal resection of the mass was performed by one of us (I. A. B.) using a suprahyoid approach.

The surgical specimen was fixed and embedded, and sections approximately 5 microns thick were mounted and covered with a thin film of celloidin. The sections were then taped

4. Montgomery, M. L.: Lingual Thyroid, West J. Surg. **43**: 661, 1935. Lingual Thyroid: Comprehensive Review, ibid. **44**: 54; 122; 189; 237; 303; 373; 442, 1936.
5. Buckman, L. T.: Lingual Thyroid, Laryngoscope **46**: 765, 888 and 936, 1936.
6. Goetsch, E.: Lirgual Goiter, Ann. Surg. **127**: 291, 1948.

to Kodak® pantomic X plates and left in place for five days. The resulting radioautograph when compared with the photomicrograph of a stained section from the same area (fig. 2), revealed that most of the radioactive iodine was localized in the acinar walls but that little was incorporated in the colloid.

The patient's postoperative course was uneventful, and she was discharged on the seventh postoperative day.

SUMMARY

1. A case of lingual thyroid was proved by radioautograph and later by microscopic examination.

2. Radioactive iodine (I^{131}) was used as an aid in the preoperative localization of thyroid tissue.

3. The patient had a well developed lingual thyroid and no clinically demonstrable thyroid tissue in the normal position.

TOXIC EFFECTS OF PERCUTANEOUSLY ABSORBED ESTROGENS

MAX A. GOLDZIEHER, M.D.
and
JOSEPH W. GOLDZIEHER, M.D.
New York

The fact that steroid hormones, particularly estrogens, can pass through the skin is well known, but the potential dangers of this route of absorption have not been noted previously. For this reason, we believe that the case reported here is of considerable theoretical as well as practical interest.

REPORT OF A CASE

The patient, a 44 year old Scotsman, presented himself with the complaint of impotence of four months' duration. He had been married for twenty-three years and had fathered four children. His sexual activity had always been regular and satisfactory. Eighteen months before seeking medical advice he had started working as a chemist for a small pharmaceutic concern; his assignment was to extract and purify estrogenic substances from pregnancy urine. During this process his hands came in frequent contact with alcoholic solutions of high estrogenic potency, and he also admitted that occasionally he scraped freshly crystallized estrogenic materials from the filter paper with his fingers. About six months after this work was started, the patient noted tenderness and increased size of the breasts. Weight loss (about 10 pounds, or 5 Kg.), headaches and decreased libido developed in three months more, and there was also some decrease in the size of the penis. No change in the amount of facial or body hair was noted.

Physical examination disclosed definitely increased breast tissue of a lobular consistency; the areolas were unusually dark in comparison with the general complexion, and the nipples were also slightly pigmented, tender and decidedly erectile. The testes were smaller than normal and rather soft; the penis was also small. There were no other physical observations of note.

Laboratory studies disclosed nothing of significance except for the urinary estrogen secretion. This was determined by extraction according to the Bachman-Petit procedure [1] and fluorimetric measurement by the technic of Bates and Cohen.[2] A twenty-four hour specimen of urine was found to contain 185 plus or minus 20 gammas per twenty-four hours (normal 15 to 24 gammas per twenty-four hours).

The patient was advised to remove himself from all contact with estrogenic substances and, in addition, was given 75 mg. of testosterone propionate plus 60 mg. of pregnenolone acetate [3] per week intramuscularly for the next six weeks. One month after the patient had discontinued his work in the chemical plant, a repeat urinary estrogen determination showed an excretion of only 11 plus or minus 2 gammas per twenty-four hours. At the end of the course of therapy the headaches had disappeared, the breasts were far less tender and appeared smaller and the impotence showed improvement. There was not much change in the size of the genitalia.

COMMENT

The clinical observations and the urinary estrogen determinations justify the conclusion that the large amounts of estrogen excreted by the patient were of exogenous origin and had entered the body by absorption through the unbroken skin. The fact that the urinary estrogen content was reduced to low normal values after the patient discontinued his occupational contact with estrogenic material corroborates this view. It seems reasonable to assume that the symptoms of genital atrophy, impotence and gynecomastia were due to the effects of exogenous estrogenic hormones.

Endogenous estrogen production could be ruled out. The two possible sources of such pathologic estrogen production are a Sertoli cell tumor of the testis and an adenoma of the adrenal cortex. Physical examination of the testes established the absence of the former; the latter could be excluded by the absence of other symptoms characteristic of cortical tumors, by the decreased estrogen excretion after contact with exogenous estrogen had ceased and by favorable response to treatment.

The percutaneous absorption of steroid hormones is a well established fact.[4] It has been shown, moreover, that the efficiency of absorption depends on the vehicle in which the steroid hormone is dissolved and brought in contact with the skin. The absorption of estrogen from a fatty medium (oil, ointment) has been estimated at 10 to 15 per cent; much better absorption is obtained from phenolic solutions, and almost 100 per cent is absorbed from alcoholic solution. An aqueous medium seems to be the most unfavorable. If results are measured by the antimasculine effects of estrogens on male rodents (atrophy and retraction of testes), the percutaneous absorption of estrogen from an organic solvent is as effective as, or even superior to, the same amount of estrogen administered subcutaneously.

According to Zondek [4] not more than 3 per cent of injected estrogen can be recovered from the urine within twenty-four hours. This has been confirmed by Jailer [5] and others.[6] On the basis of a 3 per cent recovery, and a physiologic estrogen elimination of 10 gammas, the surplus of 175 gammas represents the excretional equivalent of about 6 mg. of estrogen entering the body over a twenty-four hour period. In view of the high resorption from alcoholic solutions and the high concentrations of estrogen in the solutions handled by the patient, the absorption of this amount seems possible, although percutaneous absorption of such quantities and consequent feminization have never been reported previously, to our knowledge.

It is not likely that many persons will be exposed to an occupational hazard of such magnitude; however, this case serves to emphasize the fact that clinically significant amounts of steroid hormones can be unwittingly absorbed through the skin and that harmful effects may follow if this possibility is ignored or overlooked.

SUMMARY

A case is reported of a 44 year old man, occupationally exposed to concentrated estrogenic solutions, who absorbed percutaneously an estimated equivalent of 6 mg. of estrogen per day, with consequent genital atrophy, impotence and gynecomastia.

From the Endocrine Division, St. Clare's Hospital, New York.

1. Bachman, C., and Petit, D. S.: Photometric Determination of Estrogen, J. Biol. Chem. **138:** 689-704 (April) 1941.

2. Bates, R. W., and Cohen, H.: Quantitative Fluorescent Method for the Determination of Natural Estrogens, Federation Proc. **6:** 236-237 (March) 1947.

3. Supplied by the Schering Corp., Bloomfield, N. J.

4. Zondek, B.: Clinical and Experimental Investigations on the Genital Functions and Their Hormonal Regulation, Baltimore, Williams & Wilkins Company, 1941.

5. Jailer, J. W.: A Fluorometric Method for the Clinical Determination of Estrone and Estradiol, J. Clin. Endocrinol. **8:** 564-580 (July) 1948.

6. Pincus, G., and Pearlman, W. H.: Metabolism of Estrone in Men and Non-Pregnant Women, Endocrinology **31:** 507-514 (Nov.) 1942. Heard, R. D. H., and Hoffman, M. M.: Steroids: Fate in Man of Injected Estradiol, J. Biol. Chem. **141:** 329-342 (Nov.) 1944.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

PRESCRIPTION WRITING

The Council has authorized publication of the following statements.

AUSTIN SMITH, M.D., *Secretary.*

Harrison Narcotic Act and Prescriptions

The Harrison Narcotic Act is intended to control narcotic drugs so that they are used only for medical purposes. This law prohibits a pharmacist from filling an oral prescription; a written prescription must be received before the drug can be dispensed. A pharmacist can deliver narcotic drugs following a telephone order only when a genuine emergency exists. A physician cannot use his prescription form to obtain narcotic drugs for general office practice. Narcotic drugs for such use must be obtained on an official order from a qualified manufacturer or wholesale dealer. A prescription for a narcotic drug must be dated and signed on the date when issued, and it must bear the full name and address of the patient and the name, address and registry number of the practitioner. Such prescriptions must be typed or written in ink or indelible pencil. If typewritten the prescription must be signed by the practitioner. Prescriptions for narcotic drugs cannot be refilled. Narcotic prescriptions can be used only for legitimate medical purposes, responsibility for proper prescribing resting essentially with the practitioner. Narcotic prescriptions cannot be issued to addicts or habitual users of narcotics.

Prescriptions Under the Federal Food, Drug and Cosmetic Act

In more recent years there have been developed laws that affect the prescribing and dispensing habits of physicians and pharmacists. In earlier years, with the exception of narcotics, the majority of drugs that were used by physicians were not subject to many restrictions, and it was customary to regard with considerable leniency oral prescriptions for drugs and refilling of written prescriptions without specific authorization. During the past few years state laws have been developed which prohibit the issuance of certain drugs without prescription. A local law exists in New York City. In addition, however, there is the Federal Food, Drug and Cosmetic Act, the provisions of which are not yet familiar to all members of the medical profession, but which, nevertheless, are intimately concerned with the use of drugs. Furthermore, new interpretations are being placed on these provisions, so that it is necessary for members of the medical profession to be fully aware of current restrictions on prescribing and dispensing habits if they wish to avoid or refrain from encouraging violations of this federal law.

While the Federal Food, Drug and Cosmetic Act has been regarded by many who are not familiar with its provisions as being concerned essentially with questions of accurate labeling, prevention of adulteration and safety, its provisions, on the basis of recent court decisions and interpretations of the Food and Drug Administration, go beyond such concepts. Among the restrictions placed on prescribing and dispensing habits are several concerned with so-called prescription items and refills. The physician must have a proper understanding of these restrictions if he is to prevent misunderstanding and perhaps even embarrassment for himself or for his patients and the pharmacists who fill his prescriptions. Under the act a prescription is generally regarded as a written order by the physician for a specific quantity of drug to meet a patient's specific needs. A prescription, then, cannot be refilled, according to current interpretation of the Federal Food, Drug and Cosmetic Act, without specific authorization of a physician. To refill the prescription without authorization is, in the eyes of the Administration, equivalent to an over-the-counter sale. Over-the-counter sale of drugs that are prescription items is prohibited by law, and pharmacists are not permitted to dispense prescription items without a prescription or to refill such prescriptions without specific authorization. This means that the physician must authorize as many refills as he believes are necessary for the patient for whom the prescription is intended at the time he writes the prescription. If such authorization is missing from the original prescription the pharmacist, according to the administration, must assume that the physician intended the prescription be filled only once. The physician, of course, can issue instructions later for refills if such action seems indicated. These later instructions to the pharmacist may be verbal or written, but they must be issued directly to the pharmacist and not indirectly through the patient.

Prescription drugs are those which carry on the label a statement such as "Caution: To be dispensed only by or on the prescription of a physician" (or dentist or veterinarian). If such a legend is not present on the label, then the item presumably is a so-called non-Rx legend drug, in which case the labeling must bear adequate directions for use—which means for self medication. If a drug bears an Rx legend it cannot be sold without a prescription.

At times pharmacists must place on a prescription label certain warnings; for example, "Warning: May be habit forming." This is done if the drug is a narcotic or hypnotic substance named in a certain section of the Federal Food, Drug and Cosmetic Act if (*a*) the doctor does not mark the prescription order as not refillable or (*b*) refilling is not prohibited by local law. If the physician specifies in the prescription order that it may be refilled a certain number of times at stated intervals, and that it is not refillable after the last filling, none of the dispensed material is required to bear the warning label.

Another warning that occasionally must be placed on the prescription label by the pharmacist is one associated with certain potent drugs. So far, the Food and Drug Administration has decided that thiouracil, propylthiouracil and pentaquine must bear a warning because of the possibility of untoward reactions from the use of these drugs. This warning reads: "Warning: This drug may cause unfavorable reactions in some individuals. Your physician has explained or will explain to you the symptoms that must be watched for and precautions that must be taken to guard against ill effects. Do not take in larger doses, or for a longer time than specifically directed by the physician."

Physicians who dispense as a bona fide part of their professional practice and who by oral statements impress on the patient adequate directions for use and warnings about probable unfavorable reactions are not subject to the labeling requirements of the law that apply to pharmacists in filling prescriptions. Nevertheless, it would be in the interest of safety for such a physician to supplement his oral directions and warnings with label notations on the dispensed package.

Physicians whose dispensing is not a bona fide part of their professional practice are, of course, subject to the same requirements that apply to pharmacists.

The Food and Drug Administration does not issue an official list of drugs which may be sold only on prescriptions. However, any item that bears the prescription legend is limited to issuance by prescription, and a prescription for such an item must be written, as oral prescriptions can be recognized by a pharmacist only in times of emergency.

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SATURDAY, AUGUST 6, 1949

COMMITTEE OF THE NATIONAL ACADEMY OF SCIENCES ON THE INVESTIGATION OF CORTISONE

The recent report by Hench, Kendall, Slocumb, and Polley of the dramatic effectiveness of the adrenal cortical steroid, Cortisone (first isolated by E. C. Kendall), in the treatment of rheumatoid arthritis developed the difficult problem of distributing the limited amount of the substance obtainable for the rest of 1949. Originally obtained from the cortex of the adrenal gland, Cortisone is now being prepared from a bile acid. While the value of Cortisone in controlling the symptoms of rheumatoid arthritis is regarded as established, much remains to be learned concerning its possible untoward effects, its usefulness in other diseases and the mechanism of its action. The small amount which can be made during the last five months of 1949 will be used only for clinical and experimental research and will be made available to those investigators who may best provide the information needed to insure its safe and effective use.

The Research Corporation, a nonprofit organization which administers patents in the interest of public welfare and for the furtherance of scientific research, has aided in the development of the processes for making Cortisone. The corporation will continue to further the development of these processes and to stimulate research on the mechanisms of action of the substance. In fulfilling these functions, the Research Corporation requested the President of the National Academy of Sciences to appoint a Committee on Investigation of Cortisone, with assurance that its recommendations will be accepted as final with respect to the available supply during 1949.

The membership of the committee, appointed with the sanction of the council of the academy, includes Chester S. Keefer, chairman, Hans T. Clarke, E. A. Doisy, Robert F. Loeb, C. N. H. Long, E. K. Marshall Jr. and Joseph T. Wearn. David E. Price has been appointed to act as liaison between the committee and the U. S. Public Health Service.

The committee is planning arrangements designed to utilize to the fullest possible extent the resources of the National Research Council and the information and advice of experienced and competent investigators in the United States and Canada. Not only will rheumatism and other diseases for which relief may be anticipated continue to be investigated, but also aspects of physiology and pharmacology which are basic to fuller understanding of Cortisone.

While the academy does not have funds with which to buy Cortisone or to support investigations, the needed funds will no doubt become available from both public and private sources. The committee has accepted this responsibility because of the conviction that a new discovery of the greatest importance to the health and welfare of countless persons has been made and that it is vital to promote its most rapid and intelligent development.

Applications for a supply of Cortisone must be submitted on a form that can be obtained from the chairman of the committee, Dr. Chester S. Keefer, 2101 Constitution Avenue, Washington 25, D. C. Consideration will be given only to requests from institutions where adequate facilities for investigation and clinical control are available.

INACTIVATION OF HEPATITIS VIRUS WITH ULTRAVIOLET RAYS

Jaundice after the administration of human blood products is now a well recognized possibility. The jaundice is readily distinguishable from hemolytic icterus, which may develop promptly after transfusion with incompatible blood. Clinically the condition resembles epidemic hepatitis. The incubation period is unusually long, two to three months, in contrast with the twenty to forty day period believed to occur in epidemic hepatitis.

The quantity of icterogenic agent involved in transmission of the infection may be extremely small, as demonstrated by Bradley and his co-workers,[1] who produced jaundice in human volunteers by the administration of as little as 0.1 cc. of homologous serum. MacCallum and Bauer, Sheehan, and Droller [2] have incriminated the syringe and the needle used either for injection or for taking blood as capable of harboring and transmitting the infective agent. Mendelssohn and Witts demonstrated that some of the blood is sucked back into the vein when blood is taken from a vein with a syringe; this occurs when the tourniquet is released. If the syringe is not sterile, the patient is

1. Bradley, W. H.; Loutit, J. F., and Maunsell, K.: An Episode of "Homologous Serum Jaundice," Brit. M. J. **2**: 268-269 (Aug. 26) 1944.
2. Cited in Syringe Transmitted Hepatitis, editorial, J. A. M. A. **129**: 278-279 (Sept. 22) 1945.

exposed to infection. MacCallum and Bauer [3] showed that the icterogenic agent survived heating at 56 C. for one hour, and Oliphant found that the jaundice-producing agent is filtrable, survives drying in vacuum, storage for long periods in serum at 4 C. and heating to 56 C. for one-half hour in the dried state.

Effective sterilization of syringes and needles involves thorough cleansing followed by sterilization in the hot air oven (160 C. for one hour) or in the autoclave or by boiling for not less than fifteen minutes. Malmros and his co-workers [4] stated the belief that the risk of infection can be eliminated by the use of sterile needles alone without syringes at venepuncture and by the provision of a sufficient number of syringes to permit a fresh sterilized instrument's being used for each patient.

The suggestion that a connection between the needle and the syringe could be used to prevent the contamination of the syringe nozzle in mass inoculations is deprecated by Janeway, who does not believe that there is any adequate substitute for the use of an individual syringe and needle for each patient.

Oliphant [5] demonstrated in inoculation experiments on human beings that irradiation of icterogenic serum with ultraviolet rays inactivated the infective agent. This suggested the possibility that ultraviolet irradiation might be useful in processing potentially icterogenic blood and blood products. A new method of rapidly sterilizing suspensions of bacteria and viruses has been developed by Oppenheimer and Levinson. The method consists of exposing rapidly flowing thin films of liquid for fractions of a second to a new and powerful source of ultraviolet rays emitting intense radiation of 2,537 angstrom and 1,849 angstrom wavelengths. Stokes [6] and his co-workers, utilizing a Habel-Sockrider type of apparatus for irradiating the icterogenic serum, inoculated 11 volunteers with irradiated icterogenic serum. None showed any evidence of hepatitis. Studies of the irradiated plasma did not indicate any alteration of the electrophoretic pattern. By chemical fractionation methods, the plasma proteins remained essentially normal. Of the 15 volunteers who received nonirradiated icterogenic serum, 3 showed hepatitis with jaundice, 1 hepatitis without jaundice and 3 presumptive hepatitis. This experiment supports the work of Oliphant and strongly favors the routine use of exposure to ultraviolet rays of serum and plasma under properly controlled conditions.

3. MacCallum, F. O., and Bauer, D. J.: Homologous Serum Jaundice: Transmission Experiments with Human Volunteers, Lancet, **1**: 622-627 (May 13) 1944.

4. Malmros, H.; Wilander, O., and Herner, B.: Inoculation Hepatitis, Brit. M. J. **2**: 936 (Nov. 27) 1948.

5. Oliphant, J. W., and Hollaender, A.: Homologous Serum Jaundice: Experimental Inactivation of Etiologic Agent in Serum by Ultraviolet Irradiation, Pub. Health Rep. **61**: 598-602 (April 26) 1946.

6. Stokes, J., Jr.; Blanchard, M.; Neefe, J. R.; Gellis, S. S., and Wade, G. R.: Methods of Protection Against Homologous Serum Hepatitis: I. Studies on the Protective Value of Gamma Globulin in Homologous Serum Hepatitis SH Virus, J. A. M. A. **138**: 336-341 (Oct. 2) 1948. Blanchard, M. C.; Stokes, J., Jr.; Hempil, B.; Wade, G. R., and Spizizen, J.: Methods of Protection Against Homologous Serum Hepatitis: II. The Inactivation of Hepatitis Virus SH with Ultraviolet Rays, J. A. M. A. **138**: 341-343 (Oct. 2) 1948.

INSULIN ECONOMY

In anticipation of a predicted shortage of insulin in the near future, Johlin [1] of the Department of Biochemistry, Vanderbilt University, has suggested a plausible method for economy in the use of insulin. Experiments on rabbits indicate that the conventional dosage of insulin can be reduced by half through the use of certain amino acid adjuvants.

Earlier investigators [2] found that the normal blood sugar level of rabbits can be increased or decreased by administrations of adequate doses of amino acids. Schenk [3] found that glycine was the most effective of the amino acids which decreased the blood sugar level. Given orally 1.5 Gm. glycine, produced hypoglycemia, which reached its maximum in about one hour and disappeared within eight hours. Schenk found that self-administered glycine produced similar hypoglycemia in man.

As a preliminary to tests of the adjuvant action of glycine in insulin therapy, Johlin determined the minimum convulsive dose of insulin for adult rabbits. This varied from 0.6 to 0.7 unit per kilogram of body weight for different rabbits. Injection of half of the convulsive dose caused the blood sugar level of rabbits to fall from 90 mg. to 50 mg. per hundred cubic centimeters by the end of one hour, with full recovery by the end of five hours. Simultaneous injection of 3 mg. glycine per kilogram of body weight did not cause appreciable change in the severity or duration of this half-convulsive hypoglycemia. When the same rabbits were retested some weeks later, however, the animals reached the convulsive state with the half-convulsive dose. There was thus a twofold increase in insulin reaction due to previous glycine injection.

This heightened insulin reaction was confirmed in rabbits repeatedly given injections with glycine alone. Tested two weeks to three months later, the animals reacted to the half-convulsive dose with hypoglycemia approaching the convulsive level. The blood sugar fell to 40 mg. per hundred cubic centimeters after one hour and only partially recovered to the 60 mg. level after five hours.

Johlin concludes from such data that repeated injections of glycine in rabbits increase the subsequent therapeutic effect of insulin for prolonged periods. Johlin has not offered a theoretical explanation for this insulin hypersensitivity. If similar prolonged booster effects can be demonstrated in man, a practical method of insulin economy will have been found.

1. Johlin, J. M.: Proc. Soc. Exp. Biol. & Med. **70**: 425, 1949.

2. Pollak, L.: Biochem. Z. **127**: 120, 1922. Izumi, K.: Biochem. Z. **248**: 383, 1932.

3. Schenk, E. G.: Arch. f. exper. Path. u. Pharmacol. **167**: 201, 1932.

Current Comment

TOXIC EYE HAZARDS

"Accident Facts," published by the National Safety Council, reports that approximately 75,000 occupational eye injuries occur each year; of these, 5,000 are permanent. Increased industrialization has resulted in a corresponding rise in injuries of the eyes. The Joint Committee on Industrial Ophthalmology established by the Council on Industrial Health of the American Medical Association prepared a "Manual on Toxic Eye Hazard," [1] useful for both professional and lay personnel. In chapter 1, Dr. Ralph S. McLaughlin of Charleston, W. Va., and Thomas A. Walsh of the American Optical Company discuss the various standards and tests for eye protection equipment and a well organized eye protection program. A complete description and discussion of standards and tests of equipment for protection of the eyes was prepared for the Joint Committee by J. M. McGreevy and L. Banet from their experiences in naval shipyards. Chapter 2, prepared by Prudence Van Arsdell, presents detailed tables of individual chemicals, organic and inorganic, giving the name, trade name and main effects of these chemicals on the eye. Chapter 3 discusses first aid and emergency treatment of chemical eye injuries. A rather extensive bibliography on medical and surgical treatment of injuries of the eye is appended. The research behind this project has taken two years, and a prodigious amount of work has been done by the authors. The Committee feels that the manual should be in the hands of every ophthalmologist, medical director, industrial nurse, safety director and public health officer and all others interested in eye conservation.[1]

ELECTROSHOCK IN PSYCHOSES

At the time of the Annual Session of the American Psychiatric Association, an official statement on the use of electroshock was issued by the president, Dr. William C. Menninger, and by Dr. Nathan K. Rickles, president of the Electroshock Research Association. The statement follows:

> Electroshock therapy is accepted today as the most effective physical agent in the successful treatment of the majority of the affective psychoses when given by properly qualified psychiatrists.
>
> It should be stressed that at no time is electroshock advanced as a cure-all, but only as one very effective agent in selected classes of mental illness. It should always be preceded by a complete and thorough psychiatric study of the patient which includes an evaluation of his mental and physical status, his family and his environment, and also be followed with adequate psychosocial study and psychotherapeutic guidance.

This decision should be known particularly to general practitioners, since at least two thirds of acute psychoses are first seen by general practitioners.

1. Toxic Eye Hazards: Manual Prepared by the Joint Committee on Industrial Ophthalmology of the American Medical Association and the American Academy of Ophthalmology and Otolaryngology, New York, The National Society for the Prevention of Blindness, Inc., 1949. Price $1.

GLUTAMINASE

Current research is turning with increasing emphasis to a consideration of the chemical reactions of the individual cell. These reactions are under the control of enzymes, and in the living cell they are regulated by those factors which control the activity of the enzymes; in death, regulatory forces are largely removed and the chemical reactions proceed uninhibited to their equilibrium states. The factors which control the activity of one of these enzymes, renal glutaminase, have been studied extensively by a number of workers.[1] This enzyme acts on glutamine, a constituent of normal blood, to supply ammonia which is used in excretion of acids as their ammonium salts and the maintenance of the normal acid-base balance. When kidney tissue slices are incubated with glutamine, the formation of ammonia is increased by the presence of the sodium salts of pyruvic, phosphoric and beta-hydroxybutyric acids. The control of the activity of glutaminase in the living animal thus appears to be under the automatic control of those substances which require the formation of urinary ammonia. Beta-hydroxybutyric acid, the substance which is in large part responsible for the development of acidosis of pathologic states, is the most effective of the substances studied for the stimulation of ammonia formation.

AVAILABILITY OF VITAMIN A

In securing data on the requirement for a dietary essential, some reliable criterion of adequacy is used; also necessary is knowledge of the amount of the substance under investigation which is consumed. In making such a study of the human requirement for vitamin A, Callison and Orent-Keiles [1] estimated the intake of vitamin A activity from raw, quick-frozen and pressure-cooked carrots, using both the biologic assay with rats and a chemical method whereby the carotene was extracted and measured. The experimental animals utilized the carotene from carrots only about one third as well as they did that from peas, spinach or an oil solution of carotene. The resulting bio-assay on carrots gave values far smaller than those secured by the chemical method. Recently, the government investigators [2] studied the availability of carotene (vitamin A activity) from carrots and from sweet potatoes as indicated by the comparison of the results of bio-assay with those from chemical determination. Evidently the laboratory rat does not utilize all of the carotene contained in these vegetables; only 34 per cent was obtained from sliced carrot, 41 per cent from carrot purée and 37 per cent from sweet potato. Naturally, the question of availability of nutrients in plant tissues in human nutrition is raised by the foregoing observations. It would appear advisable to revise the tables of food composition which are widely used by dietitians so that the factor of biologic availability is included in the calculations of requirements. The possible disparity between the quantity of nutrients eaten and the amount absorbed cannot be ignored.

1. Mylon, E., and Heller, J. H.: Am. J. Physiol. **154**: 542, 1948.
1. Callison, E. C., and Orent-Keiles, E.: J. Nutrition **34**: 153 (Aug.) 1947.
2. Callison, E. C.; Orent-Keiles, E.; Frenchman, R., and Zook, E. G.: J. Nutrition **37**: 139 (Jan.) 1949.

ORGANIZATION SECTION

Washington Letter

(From a Special Correspondent)

Aug. 1, 1949.

Dr. Hench Heads Federal Panel on Arthritis

Establishment of a new study section on arthritis and rheumatic diseases, headed by Dr. Phillip Hench of Mayo Clinic, is part of the current reorganization of advisory panels serving National Institutes of Health. Appointment of Dr. Hench as chairman was announced July 31 by Federal Security Administrator Oscar R. Ewing. Nine other investigators have accepted appointment to the new section. They are Drs. Walter Bauer, Boston; Granville Bennett, Chicago; Jerome W. Conn, Ann Arbor, Mich.; W. Paul Holbrook, Tucson, Ariz.; Robert Loeb, New York City; Fred Moore, Los Angeles; Jane A. Russell, New Haven, Conn.; Emil L. Smith, Salt Lake City, and Alfred L. Wilds, Madison, Wis.

School Health Services Bill Is Modified

The House subcommittee on health legislation approved the school health services bill (S. 1411) in revised form and submitted it to the House Interstate and Foreign Commerce Committee late in July. The subcommittee did not change the portion of the bill which permits states to provide for treatment of children without regard to their families' economic status. Heeding arguments made by the American Optometric Association, the legislators have amended the bill to include optometry among the health services recognized. Other changes deal with provisions affecting pupils of parochial schools.

Quarterly Lobbying Reports Made Public

The Committee for the Nation's Health, whose efforts are devoted chiefly to stimulating public sentiment for compulsory health insurance, has informed the Clerk of the House that its income for the second quarter of 1949 was $5,080.95. The sole contributor of $500 or more was Mrs. W. H. Durham, Berkeley, Calif., according to the committee's quarterly lobbying report. An amended report for the first quarter showed contributions in excess of $40,000. Principal donors were Lessing Rosenwald, Mrs. Marion R. Ascoli, Mrs. Adele Levy, Mrs. Edith R. Stern and William Rosenwald, who gave $6,666.67 each, and Mr. and Mrs. Albert D. Lasker, $5,555.56. Expenditures for the first half of the year totaled $55,911.90.

The American Medical Association filed a report showing that the assessment fund was increased by $832,377.20 between April 8 and June 30. This brought the total to date to $1,984,-010.90. Expenses of the educational campaign conducted by Whitaker and Baxter totaled $350,109.66 in the second quarter.

The Indiana State Medical Association, in its report, listed contributions by Eli Lilly & Company ($10,000), Mead Johnson & Company ($5,000) and the Indianapolis Medical Society ($2,000).

The American Osteopathic Association, National Chiropractic Insurance Co., American Hospital Association, American Dental Association and American Parents Committee were among other organizations filing quarterly reports.

USPHS Appoints Its First Pharmacist Director

Raymond Kinsey, a career man in Public Health Service since 1914 and a member of its commissioned corps since 1930, has been promoted to the rank of pharmacist director. He is the first pharmacist officer to achieve director grade.

Senator Taft Among Critics of Department of Welfare

The Senate Committee on Expenditures, which is taking testimony on the Truman plan to transform the Federal Security Agency into a Department of Welfare, heard strenuous objections on July 28 from Senator Robert A. Taft of Ohio. He stated, in substance, that Public Health Service (formerly in the Treasury Department) already has lost much of its authority under FSA Administrator Ewing and the trend in that direction would be accelerated if it became part of a Department of Welfare.

Among witnesses scheduled to be heard before the hearings close are Dr. Frank Borzell, for the American Medical Association, and Robert P. Fischelis, representing the American Pharmaceutical Association.

Previously the Senate Committee on Expenditures heard dissenting testimony by Dr. James Raglan Miller, American Medical Association; Dr. Robert E. S. Young, Association of American Physicians and Surgeons; Dr. J. J. Montfort, Arkansas Medical Society, and Dr. E. Harold Gale, American Dental Association. They pointed out that the best solution would be establishment of a Department of Health and expressed doubt that subordination of government health activities to a layman Secretary of Welfare would be in the best interests of the people.

$3,044,140 in Mental Health Grants Awarded

FSA Administrator Ewing on July 28 announced $489,584 in federal grants to continue financing of 35 research projects in the neuropsychiatric field and $2,554,556 for subsidization of training in psychiatry, neurology, clinical psychology, psychiatric nursing and psychiatric social work. The awards had been recommended by the National Advisory Mental Health Council and approved by Dr. Leonard A. Scheele, Surgeon General. Additional grants for new projects will be announced in the near future. The training grants include stipends for 456 graduate students.

Bureau of Internal Revenue Disclaims "Crackdown" on Doctors

No political significance should be attached to the fact that tax liens have been filed against a number of physicians in various parts of the country and that some others face criminal action on evasion charges, according to an official spokesman for the Bureau of Internal Revenue. Taking cognizance of charges that a campaign is on to intimidate the medical profession against opposing the Administration program for compulsory health insurance, the Revenue Bureau official said that such allegations are wholly without foundation. Since the end of the war, he explained, a larger percentage of income tax returns filed by doctors have been subjected to "verification," and the result has been the discovery of a great number of cases in which insufficient taxes were paid. Substantiating his argument that the government is conducting no special tax drive against physicians or members of any other profession and that politics is not involved, the official pointed out that prominent members of the Democratic party have been among the defendants in some of the most noteworthy tax law violation cases of the last few years.

PUBLIC RELATIONS CONFERENCE

The second annual medical public relations conference has been scheduled for November 5-6 in Chicago, immediately following the Secretaries and Editors Conference on November 3-4. The meeting this year will be built around the state medical society public relations chairman—providing him ample opportunity to exchange ideas and to present and receive information pertinent to his activities and responsibilities.

As a result of the success of the one day medical public relations conference in St. Louis last November, this year's meeting has been expanded to a day and a half, opening the morning of Saturday, November 5, and closing with a luncheon on Sunday, November 6.

Invited are public relations committee chairmen, executive secretaries and public relations directors of state medical societies and of county medical societies which maintain executive offices. Some state presidents and other public relations staff members will undoubtedly attend as they did in St. Louis. Conference arrangements are being handled by the A. M. A. Public Relations Department headed by Lawrence Rember.

DOCTORS DEPART ON ALASKAN MEDICAL MISSION

Under sponsorship of the United States Department of Interior and the American Medical Association, five physicians left July 16 for Anchorage, Alaska, for a two week session of conferences and clinics. This was the third time in five years that medical teams have visited Alaska under Department of Interior–A. M. A. sponsorship.

The conference will be conducted by five specialists to provide Interior Department medical officers now serving in remote areas in Alaska with an intensive series of seminars, demonstrations, clinics and consultations based on late technics and developments in the fields of internal medicine, general surgery, obstetrics and gynecology, tuberculosis and ophthalmology.

At the same time eight other physicians volunteered to go to Alaska to replace the Interior Department doctors, so that they could leave their outlying posts to attend the seminar.

The mission, which departed from Washington in a transport plane provided by the U. S. Air Force, included Drs. Elliott B. Hay, Houston, Texas; Edward N. Smith, Oklahoma City; Albert N. LeMoine Jr., Kansas City, Mo.; Harry Julius Isaacs, Chicago, and George C. Turner, Chicago.

Medical Legislation

STATE LEGISLATION

California

Bills Enacted.—H. Res. 239 was adopted June 27, 1949. It provides for the creation of an interim committee to study and analyze, among other things, voluntary plans for **hospital and/or health insurance** or plans operating to protect persons from the high costs of sickness and accident in this state. H. Res. 292 was adopted July 1, 1949. It provides for the creation of an interim committee to study, among other things, the feasibility of establishing and maintaining institutions for the treatment, custody and care of **alcoholics and chronic inebriates.** A. 252 has become chapter 765 of the Laws of 1949. It makes it a misdemeanor for any person to perform an **autopsy on a dead body** without having first obtained the written authorization of the coroner or other authorized public officer or the person who has the right of disposition of the body. A. 1010 has become chapter 756 of the Laws of 1949. It provides that any person licensed to practice medicine in another state who complies with the requirements of the California Medical Practice Act with respect to registration with the board and graduation from a school approved by the board may be **appointed to a medical staff** within a state institution under the Department of Corrections and under supervision of a licensed physician and surgeon may treat persons under the jurisdiction of such state institution for a period not to exceed one year. Qualified physicians and surgeons for such purpose cannot be recruited in the state of California. At the end of the year the physician and surgeon must have secured a physician's and surgeon's certificate in order to continue as a member of the medical staff. Until such person has obtained a physician's and surgeon's certificate he shall not engage in the practice of medicine and surgery in the state except to the extent provided for in this law. A. 1948 has become chapter 794 of the Laws of 1949. It amends the business and professions code by providing that a physician who served in any of the armed forces of the United States and is included within the definition of the term "veteran" should have the same rights and privileges under the medical practice act as **medical officers in the United States Army, Navy or Public Health Service.**

Oklahoma

Bills Enacted.—H. 54 was approved May 31, 1949. It amends the hospital licensing law by exempting therefrom any place maintained primarily for the purpose of providing a home or place to live for **indigent aged persons.** H. 162 was approved June 6, 1949. It prohibits the delivery of **barbiturates** except by a pharmacist on an original prescription from a person licensed by law to prescribe and administer barbiturates. The delivery of barbiturates by a physician in the course of his practice is exempted from the provisions of this law. H. 178 was approved May 23, 1949. It provides regulations for the incorporation and licensing of **charitable and benevolent nonprofit hospital service** and indemnity corporations and nonprofit medical service and indemnity corporations. H. 179 was approved June 9, 1949. It amends the medical practice act by authorizing the board of medical examiners to require all applicants for licensure to present a properly verified certificate that they have served a **one year's internship in a general hospital** approved and recognized by the board. H. 180 was approved May 31, 1949. It supplements the basic science act by authorizing the issuance of a certificate of ability in the basic sciences to **physicians, chiropractors and osteopaths** who were licensed in the state of Oklahoma at the time the basic science act was passed in 1937 either on the basis of examination or reciprocity. H. 206 was approved June 6, 1949. It makes it unlawful for any organization to require an **applicant for employment,** as a condition of employment, to submit to or take a physical or medical examination without providing such examination at no cost to the applicant. H. 311 was approved May 31, 1949. It authorizes the Oklahoma **Spastic Paralysis Commission** to establish and maintain the Oklahoma Cerebral Palsy Institute and to furnish care, maintenance, training, treatment equipment, education and rehabilitation to persons afflicted with spastic paralysis within said institute. H. 437 was approved June 6, 1949. It is a **mental health law.** S. 171 was approved May 16, 1949. It amends the law relating to **narcotic drugs** by including isonipecaine, amidone, isoamidone and keto-bemidone within the definition of the term "narcotic drugs." S. 172 was approved May 16, 1949. It authorizes the board of nurse examiners to issue licenses to qualified persons desiring to practice as a **"Licensed Nursing Attendant,"** which is defined to mean a person licensed as such by the Board of Nurse Examiners to perform such duties as are required in the physical care of patients but not having the technical understanding necessary for and required of professional nurses. S. 253 was approved June 2, 1949. It amends the medical practice act by authorizing the **board of medical examiners** to issue a temporary license to any applicant eligible for permanent license who desires a license only for the purpose of serving a residency in the state in hospitals approved for resident training or the board. Such licenses would expire at the end of one calendar year or at the expiration of the resident training but they may be renewed annually for not to exceed two additional years on approval of the board. S. 301 was approved June 2, 1949. It authorizes the state department of public health to create and maintain a **cancer control division** to promote a program for the prevention of cancer.

Wisconsin

Bill Introduced.—A. 743, to amend the law relating to the **use of cats or dogs** for experimental purposes, proposes to make it unlawful for any person to take or send outside the state or to purchase or otherwise acquire in this state for the purpose of taking or sending outside the state any living cat or dog to be used for any medical, surgical or chemical investigation, experiment or demonstration.

Bills Enacted.—A. 11 has become chapter 402 of the Laws of 1949. It provides for the creation of a **director of nursing education** and also provides regulations for the licensing of practical nurses. A. 438 has become chapter 438 of the Laws of 1949. It amends the **chiropractic practice act** by setting forth the grounds for the revocation or suspension of a license to practice chiropractic. A. 472 has become chapter 297 of the Laws of 1949. It eliminates from the annual registration requirements of **chiropractors** the former provision that at the time of such renewal the applicant must present satisfactory evidence that he has attended at least one of the two day educational programs conducted by the Wisconsin Chiropractic Association. A. 475 has become chapter 457 of the Laws of 1949. It provides that consent for a licensed physician to conduct a **postmortem examination** of the body of a deceased person shall be deemed sufficient when given by whichever one of the following assumes custody of the body for purposes of burial: father, mother, husband, wife, child, guardian, next of kin or, in the absence of any of the foregoing, a friend or a person charged by law with the responsibility for burial. A. 642 has become chapter 431 of the Laws of 1949. It provides that **osteopathic and medical applicants** shall be given the same examination in all subjects and shall be given the same license.

Coming Medical Meetings

Aero Medical Association, New York, Aug. 29-Sept. 2. Dr. Thomas H. Sutherland, 214 S. State St., Marion, Ohio, Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., The Homestead, Sept. 8-10. Dr. Leroy A. Calkins, University of Kansas Medical Center, Kansas City 3, Kan., Secretary.

American Congress of Physical Medicine, Cincinnati, Netherlands Plaza Hotel, Sept. 6-10. Dr. Richard Kovacs, 2 E. 88th St., New York 28, Secretary.

American Hospital Association, Cleveland, Sept. 26-29. Mr. George P. Bugbee, 18 East Division St., Chicago, Executive Secretary.

American Roentgen Ray Society, Cincinnati, Oct. 4-7. Dr. H. Dabney Kerr, University Hospitals, Iowa City, Iowa, Secretary.

Colorado State Medical Society, Denver, Shirley-Savoy Hotel, Sept. 20-23. Mr. Harvey T. Sethman, 835 Republic Bldg., Denver, Executive Secretary.

Indiana State Medical Association, French Lick, Sept. 25-27. Mr. Ray E. Smith, 1021 Hume-Mansur Bldg., Indianapolis 4, Executive Secretary.

International Congress of Biochemistry, Cambridge, England, Aug. 19-25. Lieut. Col. Francis J. Griffin, 56 Victoria St., London, W.C.1, Organizer.

International Neurological Congress, Paris, France, Sept. 5-10. Dr. Raymond Garcin, 19 rue de Borgogne, Paris, General Secretary.

Michigan State Medical Society, Grand Rapids, Pantlind Hotel and Civic Auditorium, Sept. 21-23. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing 8, Secretary.

National Medical Association, Detroit, August 8-12. Dr. John T. Givens, 1108 Church St., Norfolk, Va., Secretary.

Nevada State Medical Association, Elko, Sept. 29-Oct. 1. Dr. Roland W. Stahr, 118 California Ave., Reno, Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, Hotel William Penn, Sept. 26-29. Dr. W. F. Donaldson, 8104 Jenkins Arcade, Pittsburgh 22, Secretary.

Utah State Medical Association, Salt Lake City, Sept. 1-3. Dr. Ray T. Woolsey, 42 S. Fifth East St., Salt Lake City 2, Secretary.

Vermont State Medical Society, Burlington, Sept. 8-9. Dr. James P. Hammond, 542 Main St., Bennington, Secretary.

Washington State Medical Association, Seattle, Olympic Hotel, Sept. 11-14. Dr. James W. Haviland, 338 White-Henry-Stuart Bldg., Seattle, Secretary.

Wyoming State Medical Society, Casper, Sept. 12-14. Dr. George H. Phelps, 1606 Capitol Avenue, Cheyenne, Secretary.

GOVERNMENT SERVICES

ARMY

OFFICERS ACCEPTED FOR ADVANCED TRAINING

The following Medical Department officers have been accepted for advanced training at the civilian institutions indicated: Colonels Berna T. Bowers, Ophthalmological Study Council, Boston; Albert H. Robinson, University of Pennsylvania, Philadelphia; Lieut. Colonels William B. Draper, University of Pennsylvania, Philadelphia; Raymond M. Williams, University of Pennsylvania, Philadelphia; Orland S. Olsen, University of Cincinnati, Ohio; Merle E. Smith, Harvard University School of Public Health, Boston; Majors Kenneth E. Hudson, University of Pennsylvania, Philadelphia; Donald S. Myers, Harvard University, Boston; Robert S. Lockwood, University of Nebraska, Omaha; Theodore S. Malinowski, University of Indiana, Indianapolis; William A. Collins Jr., Ohio State University, Columbus, Ohio, and Captain James G. Wood Jr., Massachusetts General Hospital, Boston. Colonels Lawrence A. Matternes, University of Pennsylvania, Philadelphia, general surgery; Tom Whayne, Harvard University, Boston, public health; James O. Gillespie, University of California, San Francisco, endocrinology; Lieut. Colonels Fratis L. Duff, Johns Hopkins University, School of Hygiene and Public Health, Baltimore, public health; Stuart I. Draper, University of California, School of Public Health, Berkeley, public health; Majors Phillip M. Nabbe, Minnesota Department of Health, St. Paul, public health, and Albert Dresner, Cook County Graduate School of Medicine, Chicago, allergy.

AMERICAN REGISTRY OF PATHOLOGY

The American Registry of Pathology is one of the four major departments of the Army Institute of Pathology. The first registry in the group which now comprises the American Registry of Pathology was established in the Army Medical Museum by the Academy of Ophthalmology and Otolaryngology in 1922. Over the years, this registry has accumulated more than 26,000 ophthalmologic specimens and has been the basis of many important researches in ophthalmic pathology. As additional registries were organized they were grouped in an overhead organization known as the American Registry of Pathology under the auspices of the National Research Council. Under the direction of Colonel James E. Ash, the activities of the American Registry of Pathology were greatly expanded. There are now 19 individual registries, which in the aggregate cover practically all of the specialty fields in medicine and contain nearly 75,000 cases.

EDUCATIONAL TRAINING

The following medical officers have been accepted for advanced training in civilian institutions:

Clifford A. Gray, Col.	Mayo Clinic, Rochester, Minn.	Radiology
Carlton W. Sargent, Lieut. Col.	University of Georgia, Augusta, Ga.	Obstetrics and gynecology
Augustus A. Hall, Lieut. Col.	Bellevue Hospital, New York	Internal medicine
Harold W. Glascock Jr., Lieut. Col.	Columbia University, New York	Curriculum development and adult education
Urban L. Throm II, Major	Cornell University Medical College, New York	Dermatology and syphilology
John W. White, Capt.	Gallinger Municipal Hospital, Washington, D. C.	Surgery
William A. Graber, First Lieut.	Cook County Hospital, Chicago	Obstetrics and gynecology

CERTIFIED BY SPECIALTY BOARDS

The following Regular Army Medical Corps officers have recently been certified by the American Specialty Boards indicated:

Lieut. Col. Bruno Jastremski	Internal Medicine
Lieut. Col. Benjamin H. Sullivan Jr.	Internal Medicine
Major Robert B. Dickerson	Internal Medicine
Major Aaron L. Kaminsky	Internal Medicine
Col. Francis W. Pruitt	Internal Medicine
Lieut. Col. Wayne G. Branstadt	Preventive Medicine and Public Health
Lieut. Col. Edward J. Dehne	Preventive Medicine and Public Health
Major Claude M. Eberhart	Preventive Medicine and Public Health
Lieut. Col. Thomas G. Faison	Preventive Medicine and Public Health
Lieut. Col. B. Dixon Holland	Preventive Medicine and Public Health
Major Gen. Edgar E. Hume	Preventive Medicine and Public Health
Lieut. Col. Gottlieb L. Orth	Preventive Medicine and Public Health
Col. Tom F. Whayne	Preventive Medicine and Public Health
Col. William L. Wilson	Preventive Medicine and Public Health
Col. Wesley C. Cox	Preventive Medicine and Public Health
Col. Rufus L. Holt	Preventive Medicine and Public Health
Col. Don Longfellow	Preventive Medicine and Public Health
Col. Karl R. Lundeberg	Preventive Medicine and Public Health
Col. Thomas E. Patton	Preventive Medicine and Public Health
Lieut. Col. Dell F. Dullum	Radiology
Major Harold F. Bertram	General Surgery
Major Roy C. Rounds	Orthopedic Surgery
Col. Conn L. Milburn	Pediatrics
Lieut. Col. Louis S. Leland	Dermatology and Syphilology
Major Abram A. Bennesson	Clinical Pathology
Major Gilbert B. Stansell	Anatomic Pathology
Col. James H. Forsee	Thoracic Surgery
Lieut. Col. John H. King Jr.	Ophthalmology
Lieut. Col. Edward A. Zimmermann	Gynecology and Obstetrics
Major Humbert L. Riva	Obstetrics and Gynecology

NAVY

POSTGRADUATE INSTRUCTION

The following Regular Navy Medical Officers have been nominated for postgraduate instruction under the graduate medical training program in the institutions indicated: Commanders Sidney A. Britten of Syracuse, N. Y., to instruction in public health at Harvard School of Public Health, Boston; Leonard J. Hahne of Savannah, Ga., to a fellowship in ophthalmology at the Illinois Eye and Ear Infirmary, Chicago; William S. Wray of Northfork, W. Va., to instruction in pediatric radiology at Children's Medical Center, Boston; Lieutenants Gustave T. Anderson of North Platte, Neb., to a residency in dermatology and syphilology at the Naval Hospital, San Diego; Henry G. Wagner of Dayton, Ohio, to a fellowship in research at Johns Hopkins University, Baltimore; Lieutenants (jg) Carleton J. Brown of New London, Conn., to a residency in pediatrics at the Boston Dispensary, Boston; Kenneth A. Parmelee of Stratford, Conn., to a residency in radiology at the Naval Hospital, St. Albans, L. I., N. Y., and William R. True of Bethany, Mo., to a residency in ophthalmology at the Naval Hospital, Bethesda, Md.

PORTRAIT OF CAPTAIN BAINBRIDGE

A portrait of the late Captain William Seaman Bainbridge, the gift of his widow, was unveiled in the Bureau of Medicine and Surgery July 8. The acceptance was by Rear Admiral C. A. Swanson, the Surgeon General, in the presence of Mrs. Bainbridge, her daughter and two sons and many others from the military and medical professions. Captain Bainbridge, who was one of the first doctors to enter the Navy Medical Corps Reserve, served with distinction in the Expeditionary Forces in the first World War on the French, British and Belgian fronts. During his long period of private practice in New York City, he made hundreds of colored models of cancer of the mouth, face and other parts of the body, and these he willed to the Navy, which has them on display in the Medical Center at Bethesda, Md.

FIRST ACTIVE DUTY

The following Lieutenants (jg) in the Medical Corps Reserve have been nominated for their first active duty as interns:

J. K. Banks of Raleigh, W. Va., graduate of the University of Arkansas School of Medicine.

Harry S. Binakonsky of Jeannette, Pa., graduate of the University of Pittsburgh School of Medicine.

Donald R. Buechel of Wichita, Kan., graduate of the University of Kansas School of Medicine.

Robert C. Drips of Rochester, Minn., graduate of the University of Arkansas School of Medicine.

Stratton R. Easter of Oakland, Calif., graduate of the St. Louis University School of Medicine.

Robert R. Foster of Portsmouth, Ohio, graduate of the George Washington University School of Medicine.

Jesse M. Hunt Jr. of Wickliffe, Ky., graduate of the University of Louisville Medical School.

Richard A. Lavin of Liverpool, Ohio, graduate of the University of Pittsburgh Medical School.

James J. Lawson Jr. of Arlington, Va., graduate of Tufts College Medical School.

Gilbert L. Nicklas of Baltimore, graduate of the University of Maryland School of Medicine.

Edward A. Schauer of Morrisville, Pa., graduate of Jefferson Medical College.

Bernard C. Smith of Bradford, Ark., graduate of the University of Arkansas School of Medicine.

NEW REGULAR OFFICERS

The following reserve medical officers on active duty have been appointed to the regular Navy: Capt. John M. Whalen, Grand Rapids, Mich.; Lieut. Comdr. Joseph C. Pinto, Philadelphia, and Lieutenants (jg) Wayne C. Brady, Columbia, S. C.; Duwayne D. Gadd, Saginaw, Mich.; John H. Heald, Billings, Mont.; Paul H. Pennypacker, Pottstown, Pa.; Charles O. Parker, Waycross, Ga., and Donald O. Ward, Roxbury, Mass.

PERSONALS

The following medical officers have been nominated for duty under instruction in the Navy's Graduate Medical Training Program: Comdr. Richard M. Street, to instruction in otolaryngology at the University of Pennsylvania Graduate School; Lieut. Comdr. Leo S. Madlem Jr., to a residency in psychiatry at the Naval Hospital, Philadelphia; Lieut. (jg) Lyle H. Prenzler, U.S.N.R., to a residency in psychiatry at the Naval Hospital, Philadelphia; Comdr. Thomas E. Cone Jr., U.S.N.R., of Cranston, R. I., to a residency in pediatrics at the Naval Hospital, Philadelphia; Lieut. Comdr. Bruce R. McCampbell to a fellowship in surgery at the Cleveland Clinic.

Dr. Bernard H. Cobetto of Pitcairn, Pa., and Dr. Robert R. Martelle of Beresford, S. D., have been nominated for appointment as lieutenants (jg) in the Regular Navy Medical Corps.

Lieut. (jg) Edward Martin Jr. of Boston has been appointed to the Regular Navy from the Reserve Corps.

Lieut. (jg) Walter C. Reilly Jr. of Glendale, Calif., has been nominated for his first active duty in the Medical Reserve Corps at the Naval Hospital, Long Beach, Calif.

MISCELLANEOUS

DR. BRUNER JOINS OAK RIDGE INSTITUTE

Dr. Harry Davis Bruner, professor and head of the Department of Pharmacology, University of North Carolina Medical School, has been appointed principal scientist in the medical division of the Oak Ridge Institute of Nuclear Studies as the no. 2 man in the institute's cancer research program. Dr. Bruner already has moved to Oak Ridge. Although the building to house the medical program is just now under construction, preliminary research problems are being undertaken in an existing wing of the Oak Ridge Hospital.

The Medical Division of the Institute is making a long range study of the treatment of malignant diseases, with particular attention being given to the use of radioactive materials and radiation. The Oak Ridge Institute is comprised of twenty-four Southern universities. It carries out a program of research, training and education in the nuclear sciences through a contract with the Atomic Energy Commission.

Dr. Bruner is the author of many original research papers and has done work on cardiovascular and pulmonary problems. In recent years, he has specialized in radiobiology. He received bachelor of science, doctor of medicine and master of sciences degrees from the University of Louisville, and a Ph.D. degree in physiology from the University of Chicago, studying under Dr. A. J. Carlson.

ACCIDENTS IN LAKE SUPERIOR IRON ORE MINES

The rising accident trend in the Lake Superior District iron ore mines is reviewed in a publication just released by the Bureau of Mines.

Although the safety record of the district, where 85 per cent of the country's iron ore is produced, was better for the eight year period 1940-1947 than in other metal mining districts, the frequency rate is climbing. Increased production and replacement of men entering the armed services in the 1940-1945 period by men with less experience, and the reentering of the mines by men released from war service during 1946 and 1947 had, and continues to have, "a definite effect on the number of injuries in the mines," according to the report.

Free copies of Information Circular 7510, "Accident Experience Iron-Ore Mines, Lake Superior District 1940-47," may be obtained by writing to the Bureau of Mines, Publications Distribution Section, 4800 Forbes Street, Pittsburgh 13, Pa.

PUBLIC HEALTH SERVICE

HOSPITALS FOR DRUG ADDICTS

The two Public Health Service hospitals for drug addicts and mentally ill patients at Lexington, Ky., and Fort Worth, Texas, were transferred July 1, 1949 from the National Institute of Mental Health to the Division of Hospitals, Bureau of Medical Services. The transfer was made as part of the reorganization within the Public Health Service. Dr. Kenneth W. Chapman, formerly clinical director of the Lexington hospital, has been appointed chief of the neuropsychiatric section of the Division of Hospitals, and will serve as liaison officer between the Hospital Division and the National Institute of Mental Health.

PERSONALS

Dr. Charles F. Blankenship, acting state health officer of Nevada on loan from the Public Health Service since last fall, has been appointed Regional Medical Director of the Federal Security Agency Region 7, with headquarters in Kansas City, Mo., succeeding Dr. Joseph O. Dean, who has been transferred to headquarters in Washington, D. C., as associate chief of the Bureau of State Services.——Dr. Noka B. Hon has been appointed cancer control consultant to the Eastern and Southern States for the National Cancer Institute, replacing Dr. Robert L. Cherry, who has become Assistant Director of the Public Health Division of the ECA Mission to Greece.——Dr. Edward T. Blomquist has been appointed Assistant Chief of the Division of Tuberculosis, U. S. Public Health Service, to succeed Dr. Theodore F. Hilbish, who goes to Johns Hopkins Hospital for special training in radiology.

Surgeon Rheim Jones and Senior Assistant Surgeon Robert C. Rodger have been assigned to Johns Hopkins University for training in otolaryngology and diagnostic bacteriology, respectively; Senior Assistant Surgeon Lynn Fulkerson Jr. has been assigned to the University of Kansas School of Medicine for graduate training in anesthesiology.

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Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CALIFORNIA

Courses for Practicing Physicians.—Stanford University School of Medicine, San Francisco, will present courses for practicing physicians September 19-23. Registration in all courses is limited and closes September 1. Half-day courses include general surgery, internal medicine, dermatology, fractures, laboratory diagnosis, endocrinology and surgical specialties; full-day courses will be given in anesthesiology and clinical ophthalmology. The fee, $75, is not covered by veterans' educational benefits. Apply to Dean, Stanford University School of Medicine, 2398 Sacramento Street, San Francisco 15.

University Appointments.—Two new faculty members have been appointed to Stanford University School of Medicine effective September 1. Dr. Robert H. Alway has been named associate professor of pediatrics, the rank he now holds at the University of Utah College of Medicine, Salt Lake City, where he has been on the faculty since 1943. Dr. Lyman M. Stowe, currently on the staff of the Yale University School of Medicine, New Haven, Conn., has been appointed assistant professor of obstetrics and gynecology. He has been a senior fellow in obstetrics and gynecology at the University of Minnesota Hospitals in Minneapolis. From 1944 to 1946 he was a medical officer in the U. S. Navy.

COLORADO

Personal.—Dr. Harry A. Sauberli, a graduate of Vanderbilt University School of Medicine, 1932, has been appointed state director of local health services for the Colorado State Division of Public Health.

Southern Colorado Medical Society.—The organizational meeting for this society was held June 18 in Pueblo. Officers elected are Drs. James Allan Shand, La Junta, president, and Eugene B. Ley, Pueblo, secretary-treasurer. Dr. Tate Miller, Dallas, was the principal speaker at the all day meeting. The society will replace the Arkansas Valley Medical Society, which became inactive during World War II.

FLORIDA

Diabetes Service Program.—The statewide diabetes service program begun in Florida in July by the State Board of Health will follow a pattern of case finding and education established by the U. S. Public Health Service Diabetes Demonstration Unit in Jacksonville. The demonstration unit has proved so successful that the demands for such programs in other sections of the state have been great. There will be testing for diabetes, especially among relatives of diabetic persons, a monthly educational bulletin for diabetic persons and their relatives and classes for diabetic persons in county health departments. There will continue to be free insulin for diabetic persons who cannot afford to purchase the drug.

ILLINOIS

Abolish Two State Posts.—The positions of state surgeon and state supervising dentist in the state public welfare department were discontinued August 1. Services will be transferred to other members of the department staff. Dr. Frederick Gruneck of Chicago has been state surgeon and Charles L. Daniels, D.D.S., of Aurora, has been supervising dentist since 1940.

Chicago

Chairman of Professional Faculty.—Dr. Percival Bailey, professor of neurology and neurologic surgery, University of Illinois College of Medicine, has been reelected chairman designate of the Professorial Faculty of the University of Illinois' Chicago Professional Colleges. The principal purpose of the Professorial Faculty is to bring about closer cooperation between the staff of the Chicago and the Urbana campuses of the University of Illinois.

The Tumpeer Scholarship.—A gift of $10,000 has been made to the Chicago Medical School to establish the Dr. I. Harrison Tumpeer Subsidiary Scholarship. The late Dr. Tumpeer, a graduate of Rush Medical College, was professor and head of the pediatric department at the Post Graduate Medical School and Hospital. He was also adjunct pediatrician of the Michael Reese Hospital, organizer and director of the pediatric department of the hospital's dispensary and attending pediatrician. He organized 11 clinics and was credited for the rapid development of the medical library at Michael Reese before his death in November 1939. The scholarship is among the first received under a new subsidiary scholarship plan created by the Chicago Medical School to subsidize the education of a medical student for four years.

Reopen Clinic for Alcoholism.—Under the auspices of the Chicago Committee for Alcoholism, which was founded by a group of physicians and civic leaders headed by Anton J. Carlson, Ph.D., the Portal House outpatient clinic has been recently reopened at 100 East Chicago Avenue as a treatment and information center. Under the medical directorship of Dr. Edward C. Frank each patient receives a diagnostic study, which includes a medical, psychologic and psychiatric evaluation followed by individual and group therapy for alcoholism. The final objective of treatment is total rehabilitation. Information on alcoholism is now available at the clinic as well as a free course of orientation lectures and discussions. The clinic, supported in part by a U. S. Public Health Service grant, is accepting voluntary contributions.

MARYLAND

Industrial Vision Service.—A new industrial vision protective service designed to promote the visual efficiency and safety of workers in Baltimore plants has been put in operation by the Maryland Society for the Prevention of Blindness in cooperation with local and industrial groups. Service includes an eyesight-screening examination of the workers. The service is designed primarily to be available at the request of plant managers who employ 200 workers or less. Findings of surveys will make it possible to learn of visual deficiencies and to initiate needed professional and protective care.

District Health Building.—Ground was broken in Baltimore June 2 for the Southern Health District building, the first district building erected expressly for the use of the city health department. It is located in a section containing many industrial plants. The two story building will serve as the administrative center for the district health officer, the nursing staff and other district personnel and will house clinics for well baby, prenatal, tuberculosis and venereal disease services. The plans also call for an auditorium which will serve as a meeting place for community groups concerned with health.

MISSOURI

Krueger Memorial Fund.—The will of Dr. Owen W. Krueger, Kansas City, Mo., who died May 20, provided that $10,000 be given to the building fund of the Jackson County Medical Society and that $1,000 be given to the Library Fund to purchase books. The legacies were presented by Mrs. Krueger to Dr. Caryl R. Ferris, Kansas City, at the executive office of the society. The society's finance committee recommended that the amount for the building fund be invested in U. S. Government Bonds and should be continued as the Owen W. Krueger Memorial Fund until the society shall use the funds to purchase a building.

NEW MEXICO

Appoints Executive Secretary.—The New Mexico Medical Society has appointed Mr. Ralph R. Marshall as its first full time executive secretary. The new executive office will be located at 4852 Southern Avenue, Albuquerque.

Society News.—A meeting of the New Mexico Clinical Society was held at the Veterans Administration Hospital in Albuquerque July 18. Dr. Merl J. Carson, St. Louis, spoke on the "Use of Angiocardiography in the Study of Congenital and Acquired Heart Disease." This was a joint meeting with the professional staff of St. Joseph's Sanatorium and Hospital in Albuquerque.

PENNSYLVANIA

Summer Seminar at Hershey.—The Pennsylvania Academy of General Practice will hold its summer seminar at the Hershey Hotel, Hershey, August 20. Dr. Elliot P. Joslin, emeritus professor of clinical medicine, Harvard Medical School, Boston, will speak on "The Treatment of Diabetes Mellitus," and Dr. Robert B. Greenblatt, professor of endocrinology, University of Georgia, Augusta, will speak on "Functional Uterine Bleeding." There is no registration fee, and the meeting is open to all physicians who are members of the American Medical Association.

Meeting of Pathologists and Cancer Society.—A meeting of the Pennsylvania Association of Clinical Pathologists, the Middle Eastern District of the College of American Pathologists, the Clinical Pathological Society of Pittsburgh and the Allegheny County Division of the American Cancer Society will be held in Pittsburgh September 23 at the Roosevelt Hotel. The program includes a slide seminar on "Cytologic Diagnosis of Cancer of the Lung," with Dr. Peter A. Herbut, Philadelphia, as moderator. The registration fee is $3. There will be available 75 sets of slides, which will be mailed to registrants two weeks before the meeting. The registration fee of $3 for the slide seminar should be sent to Dr. Elwyn L. Heller, Secretary, Department of Pathology, University of Pittsburgh, Pittsburgh.

Pittsburgh

Second Symposium on Orthopedic Appliances.—The Mellon Institute of Industrial Research will again join with the University of Pittsburgh School of Medicine in holding a Second Annual Symposium on Orthopedic Appliances at the institute during the week of September 19. The second symposium, also sponsored by the Sarah Mellon Scaife Foundation through its Multiple Fellowship on Orthopedic Appliances in the institute, will be open to invited orthopedic physicians and surgeons as well as to selected orthopedic technologists skilled in brace design, fitting and construction. The symposium's lecture staff will include nationally recognized authorities in orthopedics as well as scientists of Mellon Institute. They will give detailed attention to bracing problems in cerebral palsy, paraplegia and hemiplegia resulting from poliomyelitis and other disabling diseases, to scoliosis and related spinal conditions and to other specialized orthopedic problems. Inquiries concerning attendance and program details should be addressed to the Orthopedic Appliance Fellowship, Mellon Institute, 4400 Fifth Avenue, Pittsburgh 13, Pa.

WEST VIRGINIA

Heart Association Meeting.—Dr. Paul D. White, Boston, will be the guest speaker at an open meeting of the West Virginia Heart Association September 29 in the Charleston High School auditorium. A clinic will be held September 30 at the Daniel Boone Hotel and will be followed by a business meeting and dinner for physicians and nonphysician members of the association.

Appoint Medical Director of Compensation Fund.—Dr. James L. Vickers of Greenwich, Conn., has been appointed by Compensation Commissioner Curtis B. Trent Jr. as medical director of the Workmen's Compensation Fund, succeeding Dr. William T. Henshaw, who died April 13. Dr. Vickers, a native of Huntington, has been engaged in the practice of surgery at Greenwich for several years. Previously he had been identified with the medical department of the New York and Wisconsin workmen's compensation funds. He is a graduate of Johns Hopkins University School of Medicine, 1924.

WISCONSIN

Dr. Bradley Made Emeritus Professor.—Harold Bradley, Ph.D., was made emeritus professor of physiologic chemistry of the University of Wisconsin July 16. Dr. Bradley received a bachelor's degree at the University of California and a Ph.D. at Yale. He came to Wisconsin in 1906. In addition to many years of service to the university, he and his wife have given to the university, in memory of their daughter, Mary Cornelia, the Bradley Memorial Hospital.

Coordinator of Postgraduate Medical Education.—Dr. Robert C. Parkin, Chicago, has been appointed assistant professor of clinical medicine and coordinator of postgraduate medical education at the University of Wisconsin Medical School, Madison. He will direct and develop the postgraduate program of training started by the late Dr. Llewellyn R. Cole. Dr. Parkin received his M.D. degree from the university in 1943 and served in the recent war; after his discharge from the Army he practiced for two years in New Albin, Ia., before joining the staff of the Council on Medical Education and Hospitals of the American Medical Association.

HAWAII

Society of Neurology and Psychiatry.—Twenty-three physicians met recently in Honolulu to organize the Society of Neurology and Psychiatry of Hawaii. A constitution was formally adopted on April 13, 1949. Officers are Dr. Richard E. Kepner, Honolulu, president; Dr. Thomas S. Bennett, Honolulu, vice president, and Dr. H. Joseph Simon, Honolulu, secretary-treasurer. Meetings are held on the second Wednesday of alternate months.

GENERAL

Pan-American Doctors Club Meeting.—This group will hold a symposium on tuberculosis August 14-15 in San Miguel Regla, Huasca, Hidalgo, Mexico. Dr. Henry J. Zettelman, 636 Church Street, Evanston, Ill., is program chairman.

Send Respirators to Eleven States.—With reported cases of poliomyelitis running over 1,000 more for this year than for the corresponding period last year, the National Foundation for Infantile Paralysis by July 23 had sent 60 items of medical equipment, including 30 respirators to 17 states, principally to Arkansas and Indiana, recruited 70 nurses and 9 physical therapists for epidemic duty in 12 states and provided financial aid totaling $112,298 to 29 counties in 16 states.

Prevalence of Poliomyelitis.—Reports of cases of poliomyelitis for the periods indicated have been received from the Division of Public Health Methods, U. S. Public Health Service:

	Week Ended			Total to		Total *	
	July 23, 1949	July 24, 1948	Median Expec.	July 23, 1949	July 24, 1948	March 19-July 23, 1949	March 20-July 24, 1948
New England States:							
Maine	14	..	..	48	1	48	1
New Hampshire	5	3	3	8	3	8	3
Vermont	3	..	..	6	3	4	2
Massachusetts	31	2	2	100	11	100	8
Rhode Island	5	..	..	7	..	7	..
Connecticut	9	3	3	35	8	32	7
Middle Atlantic States:							
New York	116	33	33	272	139	252	103
New Jersey	21	23	8	106	82	70	75
Pennsylvania	6	15	12	48	65	38	54
East North Central States:							
Ohio	38	48	13	91	133	85	124
Indiana	84	11	5	191	63	181	53
Illinois	75	22	13	204	81	188	74
Michigan	82	12	7	183	39	156	33
Wisconsin	29	11	2	72	28	58	28
West North Central States:							
Minnesota	79	22	5	265	53	226	45
Iowa	45	23	8	125	117	112	104
Missouri	73	9	4	171	29	160	29
North Dakota	17	2	2	63	6	59	6
South Dakota	6	4	..	54	34	32	34
Nebraska	25	23	3	74	94	61	89
Kansas	45	9	8	137	44	111	41
South Atlantic States:							
Delaware	..	17	..	10	40	8	39
Maryland	4	..	3	20	3	11	2
District of Columbia	7	4	4	12	10	11	10
Virginia	17	18	18	42	71	32	69
West Virginia	21	2	2	68	12	61	7
North Carolina	17	204	3	85	888	58	864
South Carolina	3	35	4	32	74	19	66
Georgia	14	9	5	58	56	50	55
Florida	3	16	5	85	93	63	76
East South Central States:							
Kentucky	41	13	7	103	44	95	41
Tennessee	40	8	6	121	50	115	43
Alabama	14	14	7	97	55	84	43
Mississippi	25	11	5	120	39	109	37
West South Central States:							
Arkansas	93	13	3	421	42	410	40
Louisiana	13	1	4	90	42	78	36
Oklahoma	80	27	6	425	86	418	80
Texas	89	68	61	1,108	878	1,017	857
Mountain States:							
Montana	2	6	1	10	21	9	11
Idaho	16	4	1	96	56	83	29
Wyoming	7	7	..	14	14	14	14
Colorado	16	6	2	56	19	54	17
New Mexico	13	6	..	44	18	43	16
Arizona	4	5	..	30	27	19	26
Utah	..	3	..	55	15	39	12
Nevada	1	..	..	6	1	6	..
Pacific States:							
Washington	12	8	2	103	57	58	39
Oregon	4	7	4	60	33	44	17
California	80	192	25	708	803	419	771
Total	1,444	979	...	6,339	4,580	5,415	4,230
Median, 1944-1948	...	...	568	2,320		2,057	

* Last two columns show reported incidence since approximate average seasonal low: 18 weeks.

Courses in Laboratory Diagnosis.—The U. S. Public Health Service will give the following refresher courses in laboratory diagnosis September 12 to December 16:

Laboratory Diagnosis of Parasitic Diseases (6 weeks) September 12 to October 21.
Laboratory Diagnosis of Bacterial Diseases, Part 2, and General Bacteriology (5 weeks) October 31 to December 2.
Laboratory Diagnosis of Rabies (1 week) November 14 to November 18.
Advanced Enteric Bacteriology (2 weeks) December 5 to December 16.

Information and applications should be requested from the Chief, Laboratory Division, Communicable Disease Center, 291 Peachtree Street N.E., Atlanta, Ga.

Mississippi Valley and Medical Writers' Meetings.—The Mississippi Valley Medical Society will hold its annual meeting at the Jefferson Hotel, St. Louis, September 28-30, under the presidency of Dr. Alphonse McMahon, St. Louis. Over 30 clinical teachers from leading medical schools will conduct the postgraduate assembly, which is planned to appeal to general practitioners. There is no registration fee, and all ethical physicians are invited to attend. The American Medical Writers' Association will hold its annual meeting September 28. In the afternoon a two hour course of instruction in medical writing will be conducted by Dr. J. F. Hammond, associate editor, Journal of the American Medical Association, Chicago. Other speakers include Dr. Howard A. Rusk, New York, and Foster Eaton of the St. Louis Star-Times. Information on these meetings may be obtained from Dr. Harold Swanberg, Secretary, Mississippi Valley Medical Society, 209-224 W. C. U. Building, Quincy, Ill.

Fellowships in Cancer Research.—The Committee on Growth of the National Research Council, acting for the American Cancer Society, is entertaining applications for grants and fellowships. Applications for new grants in cancer research will be received until October 1. Investigators now receiving grants will be notified individually regarding application for the extension of these grants. Final decision on applications will be made in most cases soon after February 1. Grants approved at this time ordinarily will become effective July 1, 1950. Fellowship applications may be submitted at any time. Those received prior to October 1 will be acted on in December by the Committee on Growth. Those received between October 1 and March 1 will be acted on in April. Fellowships ordinarily will begin July 1, though this date may be varied at the request of the application. During the past year the American Cancer Society, Inc., on recommendation of the Committee on Growth, has approved research grants and fellowships totaling over $2,000,000. Communications regarding grants and fellowships should be addressed to Executive Secretary, Committee on Growth, National Research Council, 2101 Constitution Avenue N.W., Washington 25, D. C.

Distribution of Cyclotron-Produced Radioisotopes.—Cyclotron-produced radioisotopes will be made available to research men in the United States under a program announced July 23 by the Atomic Energy Commission. They will be used to apply to problems in general science, medicine, industry and agriculture. The program will augment the present distribution of reactor-produced radioisotopes, which has been in effect since August 1946. Six thousand, nine hundred and seventy-five shipments of radioisotopes of nearly 60 elements representing nearly 100 isotopic species have been made for research purposes through the facilities of the Atomic Energy Commission. Only those cyclotron-produced isotopes having half-lives of more than 30 days will be distributed initially. Included in these are 43 day beryllium 7, 3 year sodium 22, 44 day iron 59, 4 year iron 55, 250 day zinc 65, 90 day arsenic 63, and 56 day iodine 125. Other cyclotron-produced radioisotopes of significant value as tools of research may be added at a later date.

The Isotopes Division, Atomic Energy Commission, Oak Ridge, Tenn., will carry out the allocation function in the same manner as it now does with reactor-produced isotopes.

Cyclotron-produced radioisotopes, because of the method of their manufacture, are more expensive than reactor-produced isotopes, and, in order to price them at a level which will make them available to most research institutions, it will be necessary for the commission to subsidize the program to a certain extent. In addition, these isotopes will be made available free of all production charges for cancer research. Distribution of materials produced under this program will be limited to institutions and organizations within the United States and its territories and possessions.

Million Dollar Libel Suits Announced.—Dr. Anton J. Carlson, Chicago, president of the National Society for Medical Research, announced July 24 that two one million dollar libel suits have been filed by medical scientists against the Hearst Publishing Company, Inc., publisher of the Chicago *Herald American*, and William Randolph Hearst of San Simeon, Calif. One million dollars for punitive and compensatory damages is being asked by Nathan R. Brewer, D.V.M., Ph.D., of the University of Chicago in a libel suit filed in the U. S. District Court. Dr. Virgil H. Moon of Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C., filed suit for a million dollars the previous week as the result of a news story printed in the Chicago *Herald American* which "maliciously misrepresented his views on animal experimentation" May 24 and May 29 of this year. Both suits were filed against the Chicago newspaper within ten days as the result of that paper's campaign against a bill before the Illinois General Assembly to provide that condemned animals from the pounds in the state be made available to medical institutions.

"Two other suits are pending, and others will follow if necessary," Dr. Carlson said. "This is the beginning of a policy which took shape when a nationwide legal committee was formed by the National Society for Medical Research to advance medical research and to protect the medical worker and his institution against what appears to be an organized program to villify and slander medical science and scientists." The newly formed Legal Committee for Medical Research includes the attorneys and counsel of leading colleges, universities and medical institutions throughout the country, and representatives are located in every state.

Congress of Physical Medicine.—The annual session and instruction seminar of the American Congress of Physical Medicine will be held at the Netherland Plaza, Cincinnati, September 6-10. Numerous round table discussions will be presented. Those speaking by invitation include:

Bruce C. Martin, Columbus, Ohio, Use of Skin Grafts in Rehabilitation.
Harry D. Bouman, Madison, Wis., Treatment of Hyperhidrosis by Electric Current.
Francis X. Sweeny, Philadelphia, and Steven M. Horvath, Ph.D., Philadelphia, Infra-Red Heating of Tissues.
Laurence E. Morehouse, Ph.D., Los Angeles, Physiology of Exercise.
Alexander Sandow, Ph.D., New York, Latent Period of Muscular Contraction.
Fay A. LeFevre, Cleveland, Physical Medicine and Peripheral Vascular Disease.
Louis Daily Jr., Khalil G. Wakim, Julia F. Herrick, Edith M. Parkhill and William L. Benedict, Rochester, Minn., Effects of Microwave Diathermy on the Eye: An Experimental Study.
Earl D. McBride, Oklahoma City, Disability Evaluation.
Edward B. Schlesinger, New York, Rationale and Use of Muscle Relaxants in Neuromuscular Disorders.
Glenn Gullickson, Minneapolis, Study of the Effect of Unilateral Paralysis of the Lower Extremity on Bone Growth.
George H. Bishop, Ph.D., and Margaret Clare, R. P. T., St. Louis, Analysis of Periodic Muscle Activity in Experimental Animals.
Ludwig W. Eichna, Adolph R. Berger and Bertha Rader, New York, Measurement of Intracardiac and Intravascular Temperatures and Their Comparison with Rectal Temperature.
Robert L. Bowman, New York, Some Factors Influencing the Effect of Liquid-Borne Ultrasound on Biological Systems.

A Symposium of Hydrotherapy will be conducted Friday morning and a Symposium on Poliomyelitis in the afternoon. The annual dinner will be Thursday at 7 p.m.

Marriages

WILLIAM LESLIE MACVANE JR., Togue, Maine, to Miss Margaret Elizabeth Owen of Hallowell, June 4.

SAMUEL WARD CASSCELLS, Wilmington, Del., to Miss Sarah O. Dyson in Charlottesville, Va., June 11.

ROBERT FLEMING HAGERTY, Durham, N. C., to Miss Mary Louise Leffelman of Stateburg, S. C., June 4.

WILLIAM BRADFORD DE MOND, Greenfield, Mass., to Miss Margaret Virginia Weber of Denver, June 9.

WALLACE E. MILLER, Indianapolis, to Miss Beverly Dahn Welsh in Crawfordsville, Ind., May 29.

CHESTER AMOS HAUG, Rochester, N. Y., to Miss Mary Elizabeth Penn of Massena, May 14.

WALTER BURT GRENELL, Chicago, to Miss Marion L. Baskette of Pontiac, Mich., May 28.

FRANCIS J. GILROY, Edgewater, N. J., to Miss Mary M. Shay of Tompkinsville, N. Y., June 11.

STEWART MCCRACKEN, Philadelphia, to Miss Joan Adamson Fernley at Whitemarsh, June 11.

VICTOR A. MCKUSICK, Baltimore, to Miss Anne Bishop in Rochester, N. Y., June 11.

HANS LEHFELDT to Miss Maria Eisner, both of New York, May 15.

Deaths

Elias William Abramowitz ✠ New York; born in 1885; University and Bellevue Hospital Medical College, New York, 1907; clinical professor of dermatology and syphilology at the New York Post-Graduate Medical School and Hospital, New York University–Bellevue Medical Center; formerly on the faculty of Columbia University College of Physicians and Surgeons; founding member of the American Board of Dermatology and Syphilology; member of the American Academy of Dermatology and Syphilology and the American Dermatological Association; founder, past president and honorary member of the Brooklyn Dermatological Society; member and formerly chairman of the Manhattan Dermatological Society; member and formerly vice president of the Society for Investigative Dermatology; fellow and advisory board member of the New York Academy of Medicine; formerly corresponding member of the French Society of Dermatology and the German Dermatological Society; chief dermatologist of the Israel-Zion Division of Maimonides Hospital in Brooklyn; attending dermatologist to the New York Post-Graduate Hospital; attending dermatologist and syphilologist at the New York Skin and Cancer Hospital; director of dermatology and syphilology at the Gouverneur Hospital and the Jewish Memorial Hospital; during World War I a member of the Council of National Defense and an instructor in an intensive course in dermatology at Columbia under Army and Navy auspices; on the advisory board, Selective Service, during World War II; died June 13, aged 63, of hypernephroma with metastases.

Walton Martin ✠ New York; born in Staten Island, N. Y., Feb. 4, 1869; College of Physicians and Surgeons, medical department of Columbia College, New York, 1892; clinical professor emeritus of surgery at his alma mater; member of the founders group of the American Board of Surgery; member of the American Surgical Association; fellow of the American College of Surgeons; on the staff as consulting surgeon and member of the board of managers of St. Luke's Hospital; co-author of "Chemistry and Physics"; revised T. H. Green's "Introduction to Pathology and Morbid Anatomy" in 1898; one of the translators and editors of Dr. E. Von Bergmann's "System of Practical Surgery"; died at his summer home in Cornwall, Conn., June 18, aged 80, of cerebral hemorrhage.

Frank Harrell Redwood ✠ Norfolk, Va.; Medical College of Virginia, Richmond, 1913; specialist certified by the American Board of Psychiatry and Neurology, Inc.; fellow of the American College of Physicians; past president of the Norfolk County Medical Society; member of the Southern Psychiatric Association, American Psychiatric Association and the Association for Research in Nervous and Mental Diseases; formerly vice president of the Seaboard Medical Association; served during World War I; affiliated with Norfolk General Hospital, St. Vincent's Hospital and De Paul Hospital; at one time associated with the U. S. Public Health Service; died in New York May 27, aged 58.

James Arthur Attridge ✠ Port Huron, Mich.; Detroit College of Medicine, 1897; past president of St. Clair County Medical Society; fellow of the American College of Surgeons; died May 22, aged 78, of cerebral hemorrhage.

Lyle Cholwell Bacon ✠ St. Paul; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1890; an Associate Fellow of the American Medical Association; died June 4, aged 83, of cerebral hemorrhage.

Theodore Prudden Bailey, Albany, N. Y.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1880; member of the American Medical Association; affiliated with St. Peter's Hospital, where he died May 22, aged 91, of bronchopneumonia and uremia secondary to benign prostatic obstruction.

Walter Hays Baker ✠ South Bend, Ind.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1907; specialist certified by the American Board of Surgery; fellow of the American College of Surgeons; affiliated with Memorial and St. Joseph's hospitals; died June 6, aged 72, of cerebral aneurysm.

John Houston Barnett, Marlin, Texas; Vanderbilt University School of Medicine, Nashville, 1909; member of the American Medical Association; past president of Falls County Medical Society; affiliated with Buie-Allen Hospital, where he died May 27, aged 64, of asthma.

Robert Lander Bartlett ✠ Warm Springs, Va.; Tufts College Medical School, Boston, 1897; member of the Medical Society of the State of New York; for many years superintendent of the Oneida County Hospital in Rome, N. Y.; died May 25, aged 74.

Joseph Franklin Blake, Chadbourn, N. C.; North Carolina Medical College, Davidson, 1905; died May 27, aged 65, of heart disease.

Frank William Boadway, Ardmore, Okla.; Kentucky School of Medicine, Louisville, 1907; member of the American Medical Association; served as vice president of the Oklahoma State Medical Association; died April 17, aged 66, of heart disease.

David C. Bosserman, McAllen, Texas; National University of Arts and Sciences Medical Department, St. Louis, 1914; member of the American Medical Association and Missouri State Medical Association; served overseas during World War I; formerly affiliated with Christian Hospital in St. Louis; died in the U. S. Naval Hospital, Corpus Christi, May 23, aged 69, of pulmonary infarction.

Arthur Harry Bradley, St. Louis; Marion-Sims College of Medicine, St. Louis, 1892; member of the American Medical Association; died in the Barnes Hospital May 7, aged 79, of carcinoma of the cecum.

Reed Oshea Brigham ✠ Toledo, Ohio; University of Michigan Medical School, Ann Arbor, 1921; died May 23, aged 60.

Clarence Albert Butler, Hot Springs, S. D.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1899; member of the American Medical Association; died in the Veterans Administration Hospital May 7, aged 84, of uremia.

Frederick A. Carpenter ✠ Waverly, N. Y.; Eclectic Medical Institute, Cincinnati, 1889; past president of the Tioga County Medical Association; for many years school doctor; affiliated with the Tioga County General Hospital, where he died May 31, aged 93, as the result of a fall.

Charles Albert Clement, Rover, Ark. (licensed in Arkansas in 1903); died May 19, aged 74, of carcinoma of the lung.

James Francis Condrick, Quincy, Mass.; Tufts College Medical School, Boston, 1919; member of the American Medical Association; died May 27, aged 63.

Clyde Sumner Culp, Salineville, Ohio; Western Reserve University Medical Department, Cleveland, 1898; member of the American Medical Association; on the staff of City Hospital in East Liverpool, where he died May 28, aged 75.

Arthur Hamilton Deekens, New Orleans; University of Pennsylvania Department of Medicine, Philadelphia, 1889; member of the American Medical Association and the Medical Society of Virginia; served during World War I; died in Richmond, Va., May 29, aged 91, of carcinoma.

William Joseph Doyle II ✠ Wilkes-Barre, Pa.; Jefferson Medical College of Philadelphia, 1932; during World War II served as medical examiner of Wilkes-Barre draft board number 1, and was awarded a Certificate of Merit by the Selective Service System for faithful and loyal service; affiliated with the Mercy Hospital, where he died May 23, aged 41, of intestinal obstruction.

James Erle Drake ✠ Spokane, Wash.; Washington University School of Medicine, St. Louis, 1901; for many years school physician; died April 21, aged 72, of heart disease and hypertension.

Isaiah Davis Durham, West Columbia, S. C.; University of Georgia Medical Department, Augusta, 1913; member of the American Medical Association; died May 30, aged 60.

Sidney Allan Ellis, Boston (licensed in Massachusetts in 1899); died in May.

Robert H. Fisher, Waverly, N. Y.; University of Buffalo School of Medicine, 1895; died in the Robert Packer Hospital, Sayre, Pa., May 26, aged 76.

Charles Joseph Folz ✠ Evansville, Ind.; Indiana University School of Medicine, Indianapolis, 1923; county coroner; served during World War I; died June 16, aged 53.

Harold Hemmingway Foreman ✠ Akron, Ohio; Howard University College of Medicine, Washington, D. C., 1933; died June 21, aged 41.

Edwin Rolander Fouts, Ryegate, Mont.; Beaumont Hospital Medical College, St. Louis, 1892; member of the American Medical Association; died in Billings June 2, aged 79, of cerebral hemorrhage.

William L. Gambill ✠ Ashland, Ky.; Hospital College of Medicine, Louisville, 1901; fellow of the American College of Surgeons; affiliated with King's Daughters' Hospital; died June 14, aged 70, of hepatitis.

Walter Wesley Goddard ✠ Miami, Fla.; Albany (N. Y.) Medical College, 1894; an Associate Fellow of the American Medical Association; member of the Medical Society of the State of New York; at one time practiced in Schenectady, N. Y., where he was affiliated with the Eastern New York Orthopedic Hospital-School "SunnyView"; died in the Jackson Memorial Hospital April 26, aged 76, of cerebral embolus, arteriosclerosis and bronchiectasis.

John Hansen ✠ Glenbeulah, Wis.; Milwaukee Medical College, 1904; died June 1, aged 76.

Harry Haver Hatcher, Stamford, Conn.; Starling Medical College, Columbus, 1896; fellow of the American College of Surgeons; at one time practiced in Dayton, Ohio, where he was for many years county coroner, and on the staffs of Dayton State Hospital and St. Elizabeth Hospital; died May 25, aged 74.

Chessman Palmer Hutchinson, Danielson, Conn.; Baltimore Medical College, 1893; member of the American Medical Association and the Massachusetts Medical Society; died April 13, aged 88.

George Samuel Isaacs, Donora, Pa.; University of Pittsburgh School of Medicine, 1948; served during World War II; intern at St. Francis Hospital in Pittsburgh, where he died May 14, aged 26, of acute leukemia.

John Frank Jonas, Marion, N. C.; Baltimore Medical College, 1903; member of the American Medical Association; past president of the McDowell County Medical Society and the Tenth District Medical Society; for many years county coroner; died May 28, aged 76.

Edward Howard Jones, Weyauwega, Wis.; Rush Medical College, Chicago, 1883; served as a member and president of the school board; for many years affiliated with Waupaca County Hospital; died recently, aged 89.

Fred Willis Kettlestrings, Oak Park, Ill.; Rush Medical College, Chicago, 1895; member of the American Medical Association; died in July, aged 81.

Harold Arthur Kirkham ✠ Major, U. S. Army, retired, Detroit; Detroit College of Medicine and Surgery, 1913; served during World War I; entered the medical corps of the U. S Army on July 1, 1920; retired Nov. 30, 1933; died in Jennings Hospital May 16, aged 62.

Arthur William McArthur, Lincoln, Calif.; McGill University Faculty of Medicine, Montreal, Quebec, Canada, 1896; served during World War I; local health officer and school physician; on the staffs of the Mercy Hospital and Sutter Hospital, Sacramento, where he died April 28, aged 76, of coronary occlusion.

Rufus Martin ✠ Warren, Ark.; University of Nashville (Tenn.) Medical Department, 1907; served during World War I; on the staff of Hunt Hospital; died April 15, aged 68, of carcinoma of the throat.

Bernard I. Mills ✠ Maywood, Neb.; Lincoln Medical College of Cotner University, 1908; on the staff of St. Catherine of Sienna Hospital; died May 5, aged 64, of coronary occlusion.

Marion Bailey Murdock ✠ Eastland, Texas; Medical College of Virginia, Richmond, 1943; served during World War II; killed in June, aged 31, in a plane crash.

Austin Joseph O'Leary, Tacoma, Wash.; Rush Medical College, Chicago, 1905; served during World War I; died May 19, aged 67, of coronary thrombosis.

Louis Micheal Palermo, Bronxville, N. Y.; New York Homeopathic Medical College and Flower Hospital, New York, 1928; member of the American Medical Association; specialist certified by the American Board of Surgery; fellow of the American College of Surgeons; assistant professor of surgery at the New York Medical College, Flower and Fifth Avenue Hospitals in New York, where he was on the staff of the Metropolitan Hospital; died May 8, aged 46.

Irvin P. Philpot, Branford, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1908; Atlantic Coast Line Railroad surgeon; died in the Alachua County Hospital, Gainesville, May 27, aged 72.

Braxton Victor Powell, Camden, Ark.; Memphis (Tenn.) Hospital Medical College, 1899; member of the American Medical Association; past president of the Quachita County Medical Society; served during World War I; affiliated with Camden Hospital; died May 11, aged 74.

Hugh Lafayette Rains, Okmulgee, Okla.; Memphis (Tenn.) Hospital Medical College, 1903; member of the American Medical Association; served during World War I; died in San Antonio, Texas, May 21, aged 69, of coronary occlusion.

Simon James Russell, Springfield, Mass.; Harvard Medical School, Boston, 1893; for many years affiliated with Mercy Hospital, where he died June 3, aged 81.

Albert Lewis Schuyler, Colchester, Conn.; Baltimore Medical College, 1895; died May 25, aged 77.

John Sherburne II, Kew Gardens, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1919; member of the American Medical Association; affiliated with Mary Immaculate Hospital in Jamaica, St. John's Hospital in Long Island City and the Doctors Hospital in New York; died in the Hospital of the Rockefeller Institute of Medical Research in New York, May 23, aged 57.

Simon H. Slobins, Fall River, Mass.; St. Louis College of Physicians and Surgeons, 1921; died May 12, aged 61, of coronary occlusion.

Hudson Smythe ✠ Stockton, Calif.; University of California Medical School, San Francisco, 1901; served overseas during World War I; head of medical procurement and assignment committee for San Joaquin County during World War II; member of the Western section of the American Urological Association; affiliated with San Joaquin General Hospital, French Camp, and Dameron and St. Joseph's hospitals; died May 13, aged 72, of coronary thrombosis.

Karl Avery Snyder, Portage, Wis.; Northwestern University Medical School, Chicago, 1910; member of the American Medical Association; served during World War I; affiliated with St. Savior's General Hospital, where he died May 16, aged 61, of massive duodenal hemorrhage.

James Selden Sturtevant ✠ Dixfield, Me.; Medical School of Maine, Portland, 1884; an Associate Fellow of the American Medical Association; formerly secretary of the local board of health; for many years treasurer of the Oxford County Medical Association; affiliated with the Rumford (Me.) Community Hospital, Central Maine General Hospital, Lewiston, and the Maine General Hospital, Portland; died May 22, aged 90.

Alonzo Englebert Taylor, Stanford, Calif.; University of Pennsylvania Department of Medicine, Philadelphia, 1894; at one time professor of pathology at the University of California in Berkeley; member of the Association of American Physicians; died in Palo Alto (Calif.) Hospital May 20, aged 78, of fractured vertebrae, general and cerebral arteriosclerosis and bronchopneumonia.

George Wanee Teagarden, Uniontown, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1907; died May 23, aged 70, of acute coronary occlusion.

Alpheus LeRoy Thurston, Indianapolis; Indiana University School of Medicine, Indianapolis, 1910; member of the American Medical Association; died April 21, aged 65, of cerebral hemorrhage.

Russell R. Tomlin ✠ Senior Surgeon, U. S. Public Health Service, retired, New Orleans; University of Illinois College of Medicine, Chicago, 1916; entered the public health service in March 1920 and retired April 1, 1940; died April 29, aged 57, of coronary disease.

Charles Joseph Wells, Baltimore; Maryland Medical College, Baltimore, 1906; formerly vice president of the city council; died April 30, aged 67, of cerebral hemorrhage and arteriosclerosis.

Lionelle Dudley Wells ✠ Holy Hill, S. C.; Medical College of State of South Carolina, Charleston, 1910; died in Roper Hospital, Charleston, May 18, aged 64.

Edward Marsh Williams ✠ Oskaloosa, Iowa; St. Louis University School of Medicine, 1910; fellow of the American College of Physicians; past president of the Iowa Public Health Association; died May 17, aged 78, of congestive heart disease.

George Clegg Williams ✠ Pearisburg, Va.; University of Virginia Department of Medicine, Charlottesville, 1935; died May 29, aged 40, of injuries received in an automobile accident.

George N. Yagle ✠ Red Lion, Pa.; College of Physicians and Surgeons, Baltimore, 1895; an Associate Fellow of the American Medical Association; died April 23, aged 81, of arteriosclerosis.

Foreign Letters

AUSTRALIA

(From Our Regular Correspondent)

July 1, 1949.

"Free" Medicine Costs 64 per Cent More

The high cost of administration of the "free" medicine scheme has been revealed by figures recently released. The Australian government paid for 247,475 medical prescriptions for the twelve months ending May 31, 1949. For the eleven months to April 31, the government had paid the drug stores $156,025. But in salaries and general expenses, $97,907 had been absorbed to administer this payment. This meant that the cost of each medical prescription had been increased by 64 per cent. The average cost for the drugs and dispensing of each prescription was 65 cents; the administrative cost was 43 cents, making a total of $1.08 per prescription.

It is estimated that only 45 doctors in private practice, of the 5,500 in Australia, are using the government forms. Doctors employed by the commonwealth government would, of course, be obliged to use the forms. Of the private doctors who are prescribing free medicine, the highest number is in Victoria and the lowest in Queensland. One prescription for 10 ampules of penicillin in oil holds the record for high cost; the government paid $207.

An unexpected complication in the scheme is a serious shortage of medicine bottles due to the coal strike now crippling Australian industry. Drug stores are unable to meet the present demand for fluid containers and would be unable to meet the expected increase in demand under universally "free" conditions.

Regulations Changed

Under the old regulations, doctors were limited to prescribing specified sizes in mixtures and definite quantities of tablets. These restrictions have been removed by recent regulations, and a doctor may now prescribe the size or quantity which he considers best meets the need of the patient.

The British Medical Association spokesman has said that the fight against free medicine would not be affected by these changes. This concession was regarded as of minor nature and did not affect the doctors' demands for unlimited prescription and freedom from penalties.

No date has yet been fixed for the operation of the regulations compelling doctors to use the government forms for all prescriptions and making them liable to a fine of $160 if they use their personal forms for any prescriptions or any drug in a prescription in the government formulary. In the meantime the government has stated that it will recognize the right of any patient to refuse to accept a prescription on a government form. In that case, of course, the patient would be obliged to meet the cost of the prescription himself.

The government has expressed its confidence in its ability to meet any legal challenge of the validity of the Pharmaceutical Benefits Act that might be instituted by the B. M. A. in the high court of Australia and possibly referred to the privy council in Britain and is at present taking place in reference to the government's banking control legislation.

The government has further announced that regulations are at present being drafted for the general medical benefits scheme whereby half the cost of all private medical services will be paid by the government from its social security funds.

Low Infant Mortality Rate

Australia's infant mortality rate for 1948 was the lowest ever recorded for any year. The rate per 1,000 live births was 27.77.

It is not clear whether the Australian aboriginal rate is included in these figures. Because of the difficulty of collecting statistics from a nomadic people and the small percentage of surviving aboriginals, the total figure given would not be significantly affected.

New Zealand does not include the Maori population in the published infant mortality figures for that country.

This 1949 rate for Australia is tangible evidence of a slow but steady development of infant welfare services in all states of Australia over the past twenty years. Almost the only limiting factor today, in the development of these services, is the shortage of trained nursing personnel. Australian cities and suburbs are dotted with infant welfare centers to which the mother of the well baby may come for routine weighing and advice. There is a well developed follow-up system which keeps in touch with every newborn baby. In the sparsely populated areas, the railway traveling clinic, the highway mobile service and even the "flying nurse" take care of the Australian infant.

The net increase of births over deaths in Australia is now 100,000 per year. Of 177,963 infants born in 1948, 4,942 died in their first year. As a result of natural increase as well as immigration, the Australian population in the 18 months ending June 30, 1950, would increase by 400,000, compared with 900,000 in the 14 years 1933-1947.

The official population target for Australia is 20,000,000, compared with a present population of 7,500,000. This target is considered to be the minimum necessary for Australia's security and the maximum compatible with the natural resources of the country.

BELGIUM

(From Our Regular Correspondent)

July 8, 1949.

Control of State Medicine

Although in Belgium the socialization of medicine has not reached the degree it has attained in Great Britain, one observes, nevertheless, that the application of the measures of sick and invalidity insurance is abused to such an extent that one can already foresee the ruin of this institution. Without doubt, its aim, to assure equitable medical care to all those in need of it, is laudable; unfortunately, as in all human affairs, everything that is based on infringement of the liberty of the individual is bound to lead to failure.

Already there are heard in Belgium rumors that parliament is considering measures regarding the abuse and frauds committed with regard to sick and invalidity insurance. It has become necessary to take drastic measures to avoid immediate ruin.

These measures are complex, and certain details are unusual and abnormal. It can be foreseen that this structure is decaying as a result of its illogical nature. For example, "The benefit of compensation is denied to the insured who has used a means of transportation other than a common carrier, without authorization of the medical counselor of the insurance organization; the insured who will do, without authorization of the medical counselor of the insurance organization, nonremunerative work, even for himself. Nevertheless, he can do light work if these have not been forbidden by the medical counselor of the insurance organization; the insured who without authorization of the medical counselor will change his residence to go to the seaside, the country or a foreign locality; the insured who will be found in a show or theatre or where drinks are dispensed without authorization of the medical counselor of the insurance organization and outside the hours authorized for leaving the house; the insured who will be found without authorization of the insurance organization outside his domicile or residence in the following hours: 11:30 a. m. to 2 p. m. and 5 p. m. to 8 a. m., during the period extending from October 1 to March 31, 7:30 p. m. to 8 a. m., during the period

extending from April 1 to September 30, or who will be found in a drinking establishment during the hours authorized for leaving his domicile; the insured who will be found without authorization of his medical counselor in a show or theater during the hours authorized for going out; the insured who will be found away from his residence more than 15 kilometers, except on authorization of his insurance organization and a definite cause."

A reporter commented on this example: "It is just to recognize that, in making these rules, the authorities respond to their duty to the public to combat dishonesty and exploitation of unfortunate situations. To condemn the insured who does this is well and good, but is one not exaggerating when, for going out in a private vehicle of transportation (a bicycle perhaps), or to kill his boredom by passing an hour in the cinema, one must furnish authorization by a medical counselor? The most important matter is, after all, that an exact diagnosis makes it clear that the person is really an invalid or a patient."

It seems that in Belgium the law on sick and invalidity insurance is entering into a phase of existence where ridicule can kill it.

Hepatitis Due to Human Serum

At the Society of Medical Sciences of Luxemburg, S. Hertz has published a study on hepatitis caused by human serum. This new disease has acquired theoretic and practical importance. It has been the starting point of investigations which have led to the experimental demonstration of the infectious nature of hepatitides and of the existence of nonicteric forms of these infectious hepatitides. The frequency and gravity of these forms of icterus make necessary a strict revision of indications for the transfusion of blood and plasma. The product employed plays an important role. The incidence of icterus is especially large when dry plasma is employed. These facts are important from the prophylactic point of view and should be taken into consideration when a blood bank is organized.

Hepatitis due to human serum is due to a filtrable icterogenic virus which resembles, if it is not identical with, the virus of spontaneous hepatitis. It is seen especially after the transfusion of plasma. Its lesions are identical with those found in other infectious and toxic hepatitides. In the clinic they present a picture of hepatitis, with or without jaundice, which may lead to cirrhosis.

BRAZIL

(From Our Regular Correspondent)

July 4, 1949.

Tuberculosis and Pregnancy

Dr. Francisco Cerruti, assistant dean of Escola Paulista de medicina, recently published a symposium on tuberculosis and pregnancy according to the data obtained by the practitioners of the Maternidade de São Paulo. Dr. Cerruti made the following conclusions:

1. Pregnancy has little influence on the evolution of tuberculosis, especially when the tuberculosis is being treated.

2. Interruption of pregnancy does not improve the evolution of the bacillary process.

3. Pregnancy should not be interrupted, but intensive modern physical therapy should be used, as pregnancy does not restrict the full action of collapse therapy, and eventually streptomycin should be used.

4. There is no advantage in interruption of pregnancy in the advanced forms of tuberculosis.

5. In cases of initial evolutive forms which, after intensive collapse therapy in the first three months of pregnancy, have not shown improvement, abortion is indicated. These are rare clinical occurrences.

6. An abortion should never be performed after the third month of pregnancy.

7. For all practical purposes congenital tuberculosis does not exist, nor do hereditary dystrophies or hereditary predispositions, so that the child of a tuberculous woman, as a biologic and social entity, is equal to the child of a healthy mother if it is immediately protected from exposure.

8. Premature delivery is commoner than abortion in a woman with tuberculosis.

9. Hyperemesis and toxemia are rare in the pregnant women with tuberculosis.

10. Delivery in a tuberculous woman is more rapid and less painful.

11. The delivery should be attended in a manner which is easy, short, nonexhaustive and nontraumatic.

12. The delivery should be spontaneous when easy; if there is dystocia, it is preferable to shorten labor within obstetric possibilities, without waiting as long as in the case of a healthy pregnant woman.

13. The tuberculous patient has a tendency to postpartum hemorrhage.

14. The tuberculous woman is prone to hemorrhage; she must be attended immediately at the first sign of shock.

15. The mortality rate is relatively high during the postpartum period.

16. As a rule, a tuberculous woman should not nurse her baby.

17. BCG vaccine should be given to newborn infants.

18. It is advisable that those who have had small lesions of the productive type should become pregnant only one or two years after clinical cure, and those who have shown the exudative form should not become pregnant for a period of three or four years.

Biliary Lithiasis

Dr. Saulo de Moura Costa, who has been assisting in the clinic of Prof. Benedito Montenegro, has completed a study on biliary lithiasis with observations on some cases in which the operative treatment was performed. He stated that early operation is considered essential for best surgical results, as in cases of long-standing disease there are associated lesions, some of which cannot be directly reached by the surgeon. He reviewed the operative cholangiographic aspects, presenting statistics of 342 cases from Professor Montenegro's private clinic. Commenting on these statistics he pointed out that in the same service the percentage of choledocholithiasis, which was 10 per cent before the cholangiographic process was in use, rose to 15 per cent after the use of this process. Besides, it has the merit of avoiding the opening of the choledochus, which is slightly dilated and which many surgeons open based on a mere suspicion. He further treated pancreatitis and stenosing odditis, in which operative cholangiography is particularly effective, indicating the cases in which drainage of the biliary tracts should be done.

Routine Appendectomy in Gynecologic Laparotomy

An inquiry was held by Prof. Alicio Peltier de Queiroz, of the Faculdade de Medicina of Salvador, Baia, on the routine performance of appendectomy in gynecologic laparotomy. According to the replies and to his own opinion, Professor Queiroz concludes: (*a*) Almost all cecal appendixes are the site of microscopic lesions of involutive and inflammatory type; (*b*) There is no relation of cause and effect between those lesions and the condition known as "chronic appendicitis."

(*c*) A review of reciprocal relations between gynecologic conditions and appendiceal ones dismisses old beliefs still pending in many surgical minds. (*d*) It is not logical and tenable after all these facts to practice routine appendectomy in the course of gynecologic laparotomy in the present state of knowledge.

Correspondence

EMOTIONAL STIMULI AND EFFECTOR ORGANS

To the Editor:—In the conclusion of the article "Some Effects of Myanesin in Psychiatric Patients" (J. A. M. A., June 25, 1949) the authors, Schlan and Unna, state that myanesin® (tolserol®) (3-ortho-toloxy-1,2-propanediol) is the only drug that allays anxiety without clouding consciousness. For the last few years efforts have been made to prevent stimuli originating in the emotional centers of the central nervous system from reaching the effector organs. Already there are: (1) an adrenolytic drug, dibenamine (N,N-dibenzyl-beta-chloroethylamine) (Rockwell, F. V.: Dibenamine Therapy in Certain Psychopathologic Syndromes, *Psychosom. Med.* **10**: 230 [July-Aug.] 1948), and (2) a thyroid inhibitory drug, propylthiouracil (Jonas, A. D.: Propylthiouracil in the Treatment of the Anxiety State, *Med. Rec.* **161**: 422 [Aug.] 1948). Obviously, there are many more drugs with similar effect awaiting discovery. I mention here only an anticorticotropic and an antithyrotropic compound.

A. D. Jonas, M.D., New York 58.

ESTIMATION OF URINARY SODIUM

To the Editor:—In The Journal of June 25 appeared an article by Bryant and his co-workers entitled "Estimation of Urinary Sodium." Certain misconceptions and questionable features should be discussed publicly, lest they aid in perpetuating ideas and practices now considered out of date.

The authors state that daily determination of sodium is expensive and so complicated as to be prohibitive even in the hospitalized patient. The flame photometer, though expensive, is a simple and relatively accurate instrument and is in wide current use. For those institutions where the equipment and technical help for this machine are not available, there are extremely simple and accurate chemical methods which do not require special equipment (Goldzieher, J. W., and Stone, G. C. H.: *J. Clin. Endocrinol.* **9**: 95-100, 1949) and are not expensive.

The authors base their test on old data which showed that sodium and chloride excretion run roughly parallel in certain special cases. The general inapplicability of such a concept is, however, well known among physiologists and is attested by the authors' own data when comparing their figures from flame photometric measurements and Volhard chloride determinations. Nearly all recent workers in cardiac physiology have recognized that chloride determinations cannot be used to study sodium metabolism; this was recently emphasized by a careful balance study (Goldzieher, J. W., and Stone, G. C. H.: *J. Clin. Endocrinol.* **9**: 368-371, 1949). The whole modern concept of electrolyte balance, as summarized so aptly by Gamble, has pointed out repeatedly that such technics are specious and wholly unsatisfactory and that the concept of "sodium chloride" as an entity, without consideration of total acid-base balance, is totally erroneous. The entire basis of this estimation of "urinary sodium" is therefore unreliable. Moreover, the title seems rather inappropriate and should have read, perhaps, "Estimation of Urinary Chloride."

Even if this fundamental problem did not exist, the value of the technic is open to question. The authors' data indicate that: (1) a sodium range of 25 to 29 mg. may require 1 to 4 drops of solution (a 400 per cent error); (2) 2 drops of reagent may indicate anything from 11 to 150 mg. of sodium per liter and 13 drops may represent anything from 330 to 820 mg. of sodium per liter, and (3) levels of 50 to 70 mg. of sodium per liter are estimated by this test at anything from 100 to 700 mg. (a 700 per cent error).

Any test, no matter how convenient, which is subject to a 700 per cent error in qualified hands is meaningless. In such circumstances it seems probable that careful inquiry by the physician or the recording of dietary intake by the patient would be far more likely to reveal actual errors in the control of sodium intake.

Joseph W. Goldzieher, M.D., New York.

MYOCARDIAL INSUFFICIENCY

To the Editor:—I refer to the excellent article by Dr. George R. Herrmann on myocardial insufficiency in The Journal of June 11. On page 509 is a statement referring to the direct application of the Fick principle: "Cardiac output equals the total oxygen consumption per minute divided by auricular-ventricular oxygen difference times 100." I would appreciate your clarifying whether it should not be "arteriovenous" instead of "auricular-ventricular."

The routine application of the Fick principle in measuring cardiac output was always based on the difference between the oxygen contents or carbon dioxide contents in arteriovenous blood samples. It may be that the venous catheterization of the right atrium, right ventricle and pulmonary artery introduced a new method in measuring the cardiac output. Your explanation on the subject will be greatly appreciated.

Thaddeus D. Labecki, M.D.
Director, Sunflower County Health Department,
Indianola, Miss.

This letter was referred to Dr. Herrmann who replies:

To the Editor:—Dr. Labecki is right. He read the paper more carefully than I or my associates read the proof. The statement on page 509 concerning the direct application of the Fick principle should read, "cardiac output per minute equals the total oxygen consumption divided by the arteriovenous oxygen difference times 100." The only way I can explain it is that I had "A.V." in my manuscript and my secretary interpreted the A.V. incorrectly as auricular-ventricular rather than as it should have been, arteriovenous. I should have caught the error in proofreading.

The routine application of the Fick principle in measuring the cardiac output in man has been indirect. However, right heart catheterization permits the direct application in man. There is some preference for determination of the difference between oxygen content rather than carbon dioxide content in the arterial and venous blood samples. The arterial blood is taken from the femoral artery under oil. The venous blood is drawn from the right atrium by venous catheter. Catheterization has thus facilitated the collection of samples of truly mixed venous blood from man which could previously be obtained only by puncturing the right side of the heart. This was done in animals, which of course, was not justifiable in human beings, because the risk was too great. However, the dangers with the present method are practically nil. Heart catheterization has made possible the application of the direct Fick principle to human beings.

George R. Herrmann, M.D.,
Professor of Internal Medicine, Galveston, Texas.

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Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Various Centers. Sept. 12-14. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY, INC. *Oral.* Denver, Oct. 16-20. Sec., Dr. Curtiss B. Hickcox, 745 Fifth Ave., New York 27.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY, INC.: *Written.* Various Centers, Sept. 15. *Oral.* Cincinnati, Sept. 15. Sec., Dr. George M. Lewis, 66 East 66th St., New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Oct. 17. Asst. Sec.-Treas. Dr. W. A. Werrell, 1 Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, June 3. Final date for filing applications is Jan. 1. Sec., Dr. W. J. German, 789 Howard Ave., New Haven.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY, INC. *Part I.* Various Centers. Feb. 3. Final date for filing application is Nov. 5. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: St. Louis, Oct. 15-19; Boston, December. Sec., Dr. S. J. Beach, 56 Ivie Rd., Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY. *Part II,* New York City, Feb. 9-10. Final date for filing application for Part II is Aug. 15. Address: Sec.-Treas., Dr. Harold A. Soheld, Room 1836, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Oct. 4-7. Sec., Dr. D. M. Lierle, University Hospitals, Iowa City.

AMERICAN BOARD OF PATHOLOGY: Chicago, Oct. 7-8. Final date for filing application is Sept. 1. Sec., Dr. Robert A. Moore, 507 Euclid Ave., St. Louis.

AMERICAN BOARD OF PEDIATRICS: *Oral,* Cleveland, Sept. 16-18; New York City, Oct. 21-23; Chicago, Dec. 9-11. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PLASTIC SURGERY: Examinations are given in June and November of each year in the home town of applicants. Sec.-Treas., Dr. Louis T. Byars, 400 Metropolitan Bldg., St. Louis, Mo.

AMERICAN BOARD OF PREVENTIVE MEDICINE AND PUBLIC HEALTH: *Parts I and II.* New York, Oct. 22-24. Final date for filing application is July 22. Sec., Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY, INC. *Special Examination,* Chicago, Oct. 24-25. December, New York City. Final date for filing applications is Sept. 15. Sec., Dr. F. I. Braceland, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: *Oral.* Cincinnati, Sept. 28-Oct. 2. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* Various Centers, October 26. Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: *Written.* December. *Oral and Clinical.* Chicago, Feb. 11-15. Final date for receipt of case histories is Sept. 1, 1949. Sec., Dr. Harry Culver, 7933 Sunnyside Road, Minneapolis 18.

BOARDS OF MEDICAL EXAMINERS

ALASKA: * Juneau, Sept. 6. Sec., Dr. W. M. Whitehead, Box 140, Juneau.

ALABAMA: *Examination.* Montgomery, June 27-29. Sec., Dr. D. G. Gill, 519 Dexter Avenue, Montgomery.

ARKANSAS: * *Examination.* Little Rock, Nov. 3-4. Sec., Dr. Joe Verser, Harrisburg. *Eclectic.* Little Rock, Nov. 3. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Examination.* Los Angeles, Aug. 15-18. Sec., Dr. Frederick N. Scatena, 1020 N Street, Sacramento.

DISTRICT OF COLUMBIA: * *Examination.* Washington, Nov. 14-15. Sec., Dr. G. C. Ruhland, 4130 E. Municipal Bldg., Washington.

FLORIDA: *Examination.* Jacksonville, Nov. 27-29. Sec., Dr. Frank D. Gray, 12 N. Rosalind Ave., Orlando.

GEORGIA: *Examination.* Atlanta, Oct. 11-12. *Reciprocity.* Atlanta, Oct. 13. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.

GUAM: *Endorsement.* Agana, Last Friday of each month. Sec., Capt. C. K. Youngkin, Dept. of Public Health, Guam, % F.P.O., San Francisco.

ILLINOIS: Chicago, Oct. 4-6. Supt. of Registration, Mr. Fred W. Ruegg, Capitol Bldg., Springfield.

INDIANA: *Examination.* Indianapolis, June. Sec., Dr. Paul R. Tindall, 1138 K. of P. Bldg., Indianapolis.

IOWA: *Examination.* Des Moines, Dec. 5-7. *Reciprocity.* Des Moines, Sept. 5, Oct. 3, Nov. 7, Dec. 5. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

KANSAS: Topeka, Dec. 8-9. Sec., Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

MARYLAND: *Examination.* Baltimore, Dec. 13-16. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore 1. *Homeopathic. Examination.* Baltimore, Dec. 13-14. Sec., Dr. John A. Evans, 612 West 40th St., Baltimore.

MINNESOTA: * Oct. 18-19. Sec., Dr. Julian F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul 2.

MISSISSIPPI: *Reciprocity.* Jackson, December. Sec., Dr. Felix J. Underwood, State Board of Health, Jackson 113.

MONTANA: Helena, Oct. 3-5. Sec., Dr. Otto G. Klein, First National Bank Bldg., Helena.

NEVADA: Carson City, Nov. 7. Sec., Dr. George H. Ross, 112 N. Curry St., Carson City.

NEW HAMPSHIRE: Concord, Sept. 8-9. Sec., Dr. J. S. Wheeler, 107 State House, Concord.

NEW JERSEY: Oct. 18-21. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: * Santa Fe, Oct. 10-11. Sec., Dr. Charles J. McGoey, Coronado Bldg., Santa Fe.

NEW YORK: *Examination.* New York, Albany, Syracuse and Buffalo, Oct. 4-7. Sec., Dr. Jacob L. Lochner Jr., 23 S. Pearl St., Albany 7.

OHIO: *Examination.* Columbus, December. *Endorsement.* Oct. 2. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

PUERTO RICO: San Juan, Sept. 6-10. Sec., Dr. Luis Cueto Coll, Box 3717, Santurce.

SOUTH CAROLINA: *Examination.* Columbia, Nov. 8-9. *Reciprocity.* First Monday of every month. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

TENNESSEE: *Examination.* Memphis, Sept. 28-29. Sec., Dr. H. W. Qualls, 1635 Exchange Bldg., Memphis 3.

VIRGINIA: *Examination.* Richmond, Dec. 2-3. *Reciprocity.* Richmond, Dec. 1. Sec., Dr. K. D. Graves, 631 First St., S.W., Roanoke.

WISCONSIN: * *Examination.* Madison, Jan. 10-12. Sec., Dr. C. A. Dawson, River Falls.

WYOMING: Cheyenne, Oct. 3. Sec., Dr. Franklin D. Yoder, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA: Juneau, Aug. 28. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

ARIZONA: *Examination,* Tucson, Sept. 20. Sec., Mr. Francis A. Roy, Science Hall, University of Arizona, Tucson.

ARKANSAS: *Examination.* Little Rock, Oct. 4. Sec., Mr. L. E. Gebauer, 1002 Donaghey Bldg., Little Rock.

COLORADO: *Examination.* Denver, Sept. 14-15. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 3.

DISTRICT OF COLUMBIA: Washington, Oct. 24-25. Sec., Dr. G. C. Ruhland, 4130 E. Municipal Bldg., Washington.

FLORIDA: *Examination,* Gainesville, Nov. 5. Sec., Mr. M. W. Emmel, University of Florida, Gainesville.

MICHIGAN: *Examination.* Detroit and Ann Arbor, Oct. 14-15. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing 15.

MINNESOTA: *Examination.* Minneapolis, Oct. 4-5. Sec., Dr. Raymond N. Bieter, 105 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: *Examination.* Omaha, Oct. 4-5. Director, Bureau of Examining Boards, Mr. Oscar F. Humble, Room 1009, State Capitol Bldg., Lincoln 9.

NEW MEXICO: *Examination.* Santa Fe, Aug. 7. Sec., Miss Marguerite Kilkenny, 110 W. Houghton St., Santa Fe.

OREGON: Portland, Sept. 10 and Dec. 3. Sec., Mr. Charles D. Byrne, State Board of Higher Education, Eugene.

RHODE ISLAND: *Examination.* Providence, Aug. 10. Administrator of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Vermillion, Dec. 2-3. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

WISCONSIN: Milwaukee, Sept. 24 and Dec 3. Sec., Prof. W. H. Barber, Ripon College, Ripon.

Bureau of Medical Economic Research

MEDICAL ECONOMIC REVIEWS AND ABSTRACTS

Prepared by the Staff of the Bureau of Medical Economic Research

(Continued from page 1117)

Old Age and Survivors' Insurance and Old Age Assistance in the South. By E. J. Eberling. The South. Econ. J. 15: 54-66 (July) 1948.

Based on payroll taxation to which employer and employee jointly contribute, the Old Age and Survivors' Insurance has as its greatest defect the limitation of coverage. As it excludes agricultural, domestic and self-employed workers, among others, it does not cover 46 per cent of the working groups. This amounts to discrimination against the South, the author maintains, because this section is largely agricultural. In spite of lower state incomes for provision of public assistance, it throws on these states a heavier financial burden than that borne by states with higher incomes. In turn, this increases the expenditures for the noncontributory Old Age Assistance in the South, although the original intent of the act was to decrease the Old Age Assistance slowly as payroll deductions placed an increasing number under the Old Age and Survivors' Insurance. Thus, while the Old Age Assistance number rose from 205 per thousand in June 1946 to 222 in July 1947 for the entire country, the number in the South rose from 235 to 284, showing that the other states were actually following the operation of the plan as hoped for at its institution. This increase in the Old Age Assistance is also undesirable because the noncontributary

plan does not grant the same opportunities for retention of self respect and pride as the payroll deduction plan. A further result of the extended use of Old Age Assistance is the lowering of benefits to a mere pittance in many states of the South and even denial in some instances of eligible needy because of lack of funds.

In addition to the limitation of coverage by the Old Age Survivors' Insurance and its resulting complications, the benefits secured under it are inadequate in the South. Not only have the living costs there risen faster than benefit increases—a fact true throughout the nation—but the greater the number of beneficiaries of Old Age Survivors' Insurance, the lower the per capita income.

In agreement with the unheeded 1946 recommendation of the House Ways and Means Committee, Eberling calls for all-inclusive coverage under the Old Age Survivors' Insurance, contending that administrative difficulties long recognized are not insurmountable. To tide over the needy during delay in this change, he suggests federal grants to the South for public assistance, allocated on the basis of per capita income, the lower income state receiving the most aid.

More generally, the author points out the need for revision of benefits to meet the cost of living, the need for a lowered age of eligibility in the cases of women to 60, because women are usually younger than their husbands, and the need for an addition of disability insurance to the Old Age Survivors' Insurance.

Relationship Between Per Capita Income and Mortality in the Cities of 100,000 or More Population. By Marion E. Altenderfer, Associate Statistician, United States Public Health Service. Pub. Health Rep. 62: 48 1681-1691 (Nov. 28) 1947.

The United States Public Health Service has undertaken a study of the relationship between health status and environmental factors in all counties of the United States and in cities with 10,000 or more population. This article analyzes mortality data for the ninety-two cities with populations of 100,000 or over in order to answer the questions "What is the relation between the per capita buying income of the community and mortality from several causes?" and "What is the influence of the color composition of the population on this relationship?" Mortality data were obtained from the Bureau of the Census report on births and deaths for the period 1939-1940 and were adjusted to the age distribution of the United States population in 1940. Color composition data and population figures were taken from the 1940 census and per capita buying income statistics were from the "Annual Survey of Buying Power" published by *Sales Management*.

The ninety-two cities were divided into three groups on the basis of per capita income, and the average total, infant and maternal mortality rates were computed for each group. The average total death rate decreased from 1,212 for the lowest income group of cities to 1,097 for the middle group to 1,092 for the highest group. The infant mortality rate showed the same relationship to income, while the maternal mortality rate in the middle group was considerably lower than in the lowest group and also slightly lower than in the highest group. Average mortality rates for seventeen major diagnosis groups were computed for each of the three income groups of cities. The rates for syphilis, chronic diseases, influenza and pneumonia, appendicitis and hernia showed the same trend as total and infant mortality rates, while the rates for infectious diseases, tuberculosis, pellagra, diseases of the ear, nose and throat, and accidents other than motor vehicle accidents, cancer, cirrhosis of the liver and diseases of the gallbladder tended to increase with increased income, but the rates for diabetes and ulcer of the stomach showed no correlation with income.

In order to examine the relationship between color composition and mortality, the ninety-two cities were divided into three groups according to the percentages of white persons in the population. The group of cities with less than 90 per cent of white persons had the highest average total, infant and maternal mortality rates, while the group with 97 per cent or more of white persons had the lowest rates. A further division of the three income groups into the three color composition groups reveals the effect of this relationship between color composition and mortality on the relationship between income and mortality. With the addition of the color factor, the inverse relationship between mortality and income holds true in all but three cases; the lowest total death rate is found in the middle income group in cities with 90 to 96.9 per cent of white persons, and the lowest maternal mortality rate occurs in the middle income group in the two groups of cities with less than 97 per cent white populations. At each income level, mortality rates vary inversely with the proportion of white persons in the population. For the five disease categories (infectious, tuberculosis, syphilis, pellagra, and influenza and pneumonia) for which national nonwhite mortality rates are general higher than white rates, mortality is greatest in cities with the largest nonwhite population; the reverse is true of the four diagnoses (cancer, diabetes, goiter and gallbladder diseases) in which white rates exceed nonwhite rates. In general, the color composition of the population does not seem to affect the pattern of association between income and mortality from the seventeen diagnoses; the color differential was most prominent in the cases of exophthalmic goiter, gallbladder diseases and diabetes.

Caution should be used in drawing conclusions from the observed relationships between income and mortality rates. Low income may be the effect, as well as the cause, of ill health. Moreover, it is difficult to isolate the effects of differences of income on mortality rates from the effects of social and cultural differences such as housing, education, diet preferences, hygienic habits and willingness to make use of medical care facilities. The lower infant mortality rates in upper income groups are no doubt largely because of lower birth rates, better health education and better care of infants among higher income families. The causes of death which are positively correlated with income characteristically occur later in life than do those diseases showing a negative correlation with income. Since per capita buying power is probably greater for older persons, the observed relation between income and mortality from specific causes may be due primarily to failure to use age-specific rates in the computations. The inverse ratio between mortality and the proportion of white persons within each income group indicates that the association between mortality and color composition is due to differences in ways of life as well as to variations in income. Altogether, the data presented in the article would seem to prove the wisdom of a statement from the Brookings report on compulsory health insurance: " . . . health problems in the United States involve economic, cultural, and social racial differences and interracial relations."

Statistical Problems in Developing Voluntary Medical Expense Insurance Plans. By Morton D. Miller, The Equitable Life Assurance Society of the United States. J. Am. Statistical Assoc. 43: 290-299 (June) 1948.

Since 1930 the number of persons covered by hospitalization insurance has risen from almost nothing to 52,000,000. The spread of voluntary insurance plans to insure the cost of physicians' services has been even more phenomenal. Only since 1938 has the cost of surgical operations and of obstetric care been included in insurance plans; since 1943 the cost of other types of medical services has been included; yet, in 1947 over 20,000,000 persons were insured for some surgical benefits, of whom one third were also covered by some form of medical expense insurance for nonsurgical services.

While community organizations similar to and sometimes affiliated with the Blue Cross hospital service associations have participated in the development of medical care insurance, most of the coverage has been provided by the life insurance companies through group insurance (insurance in which a single master contract issued usually to an employer covers the group of his employees and often their wives and children). Cash payment is made in accordance with a schedule of maximum reimbursements in the master policy; any payment in excess of the fees in the schedule are made by the insured employee himself.

These new forms of insurance involve a great number of actuarial and statistical problems. Among these is the one of securing some basis for the establishment of the initial premium rates. The foundations for calculating these rates are frequency of occurrence of the event insured against and the average amount payable when the event occurs. On the basis of experience gained in connection with hospitalization and other

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forms of insurance, one company computed a scale of premium rates for group surgical insurance. Since the annual rate of hospitalization was found to be 7 per hundred for male employees and three fourths of all hospitalized cases involved surgery, the annual frequency of surgical procedures for male employees would be 5.3 per hundred. After a study of the proposed schedule of benefits, it was estimated that $50 would be the average amount of each claim. The product of the frequency and the average benefit gave $2.65 for the net annual claim cost. This figure, when increased by the amount calculated to be necessary for expenses of operation and contingencies, resulted in a gross monthly premium rate of $0.35 per male employee.

In accordance with experience under other forms of disability insurance, the gross monthly premium rate for a female employee was set at $0.70, double that for a male employee. In practice, separate premium rates were not charged for male and female employees but a composite rate was computed at the effective date of the group policy depending on the percentage of female employees covered. The gross monthly premium rate for a dependent family unit (a wife and two children) was $1.40 if obstetric benefits were excluded and $2 if obstetrics were not excluded.

The construction of initial premium scales for the group medical expense plans involved a much less satisfactory statistical basis than that used for surgical benefits. It was necessary to fall back on studies made of the utilization of medical care by uninsured persons. But such studies did not present an accurate picture, since the very presence of insurance benefits materially affect their utilization. An increase in utilization rates was a usual consequence of a reduction of the cost which would otherwise be a deterrent to the demand for such services.

Group insurance policies are written for a period of one year, subject to annual renewals thereafter. The premium rates are subject to revision upward or downward at the end of each policy year, and the policies participate in the surplus earnings of the company through a declaration of dividends or retroactive rate credits. These dividends or rate credits are computed by a method known as "experience rating," in which weight is given to the claim experience of the individual group policy and to the claim experience of the class of policies to which it belongs. Renewal underwriting and the computation of dividends or rate credits are made from a record showing premiums due and the number and amount of claims incurred for each group policy for each policy year.

These individual group experience records provide the material for further statistical analysis within a company once a plan for medical or hospitalization insurance is under way. The question arises whether there should be established, on a continuing basis, a system of coding individual claims, involving the use of all or a specific fraction of all claims or whether basic claim rates and claim costs should be developed on a continuing basis with any additional detailed information obtained from occasional sample studies designed for specific purposes. The writer believes that the additional detailed information does not warrant the cost of securing it on a continuing basis as against the lesser cost of conducting periodic or occasional sample studies.

It is desirable to pool the experience of several companies not only to improve the reliability of statistical results but to provide a standard by means of which any one company can judge the efficiency of its operations. For this reason a standing committee of the Actuarial Society of America known as the Committee to Prepare Mortality and Morbidity Studies on Group Insurance was established. Since the Committee's work was interrupted by the war, its first study, which is on intercompany morbidity experience, has just been completed for publication in the 1948 *Transactions* of the Actuarial Society. For the present, group medical insurance is not being studied, largely because of the newness of the coverage, the wide variety of plans written and the diversity in policy provisions. The committee has undertaken a sample study based on individual surgical claims to supply information regarding the relative frequency with which different surgical procedures occur and the relative values of the fees being charged by physicians for such procedures.

Although insurance against the cost of medical care is relatively new, there has already been great progress as evidenced by the phenomenal spread of such insurance plans. The statistical studies now being conducted and the experience of the insurance companies will undoubtedly contribute valuable knowledge for continued progress in this field.

Cooperation for Rural Health. By Helen L. Johnston, Cooperative Research and Service Division, Miscellaneous Report 123, United States Department of Agriculture, Farm Credit Administration, 1948.

Growing interest in the problems of extending health services among all parts of the population is reflected on all sides. This report presents a broad review of activities among farm groups during the years 1945 to 1947 to solve their own health problems. It is concerned principally with the programs developed by local farmer cooperatives in various parts of the country, but also includes some information on planning activity among national, regional and state farm associations.

Pertinent summaries are given on the history and development of several specific types of programs. Included are cooperative farm group enrolment in Blue Cross hospital plans, the farmer-sponsored Group Health Mutual indemnity hospital-surgical insurance plan and local prepaid cooperative health associations. The report describes the activities of four rural health cooperatives located in Oklahoma, Texas and Kansas which have built their own hospitals and employed physicians and auxiliary staff to provide service to member families. These have been in operation for five to seventeen years.

A final section presents an extensive outline of suggestions for studying, planning and developing rural health improvement programs. This report concerning self-help rural programs will provide interesting perspectives for both urban and rural physicians.

Factors Influencing the Relative Number of Aged Beneficiaries Under Old-Age and Survivors Insurance and of Old-Age Assistance Recipients in the States. Federal Security Agency, Social Security Administration, July 1947.

In 1946 the total population over 65 years of age was 10,272,000. There were 1,069,753 beneficiaries of Old Age and Survivors' Insurance, or 104 per thousand aged, and 2,103,536 recipients of old age assistance, or 205 per thousand aged. The ratio between beneficiary and recipient rates was 51:100.

The pattern of the old age assistance program is less well defined than that of the Old Age and Survivors Insurance because of a variation of interpretations of the former by the different states. This factor prevents a consistent relation between beneficiary and recipient rates. However, certain relationships hold in general: (1) a definite positive relation between the covered employment ratio and the beneficiary rate, (2) a positive relation between the beneficiary rate and the degree of industrialization and urbanization, and (3) a positive relation between per capita income and the beneficiary rate and a negative relation between per capita income and the recipient rate.

The beneficiary rate increased from 76 per thousand aged in June 1945 to 104 per thousand aged in June 1946, while the recipient rate increased from 202 to 205 per thousand. In the future, the beneficiary rate should grow to exceed the recipient rate.

There is nothing in the article about the proportion of old age assistance and survivors insurance funds attributed to medical care.

Forecasts of the Population of the United States, 1945-1975. By P. K. Whelpton, United States Department of Commerce, Bureau of the Census, 1947. A revision of **Estimates of Future Population of the United States, 1940-2000,** prepared by Warren S. Thompson and P. K. Whelpton for the National Resources Planning Board, 1943.

The forecasting of population trends is exceptionally hazardous because of the control over population size exercised by births, migration and the medical advancements in the conquest of disease. In spite of all the hazards, the Bureau of the Census has realized the importance of obtaining some estimate of the population of United States as far distant as 1975 and has made a commendable attempt to obtain such a forecast.

Mortality rates have been decreasing steadily since 1900. This is true for all age groups, with a greater decline occurring

in the younger age groups than in the older. The rates for females have been lower than the rates for males, with both sexes showing a decrease at all ages. Mortality rates for the nonwhite population are considerably higher than for the white, but both decrease at about the same rate. The rate for white males decreased from 66 in 1929-1931 to 46 in 1940-1944 for the under 1 age group, whereas the rate for females decreased from 52 to 35.

Since mortality rates have decreased, life expectancies have increased for both male and female at about the same rate. However, the life expectancies are higher for females than males, and the life expectancies for nonwhites are lower than the life expectancies for whites.

Future trends are estimated on the basis of high, medium and low mortality assumptions. On the basis of each of the assumptions the mortality rates show a definite decline. The infant mortality rates are predicted to be 28 in 1975 for native white males assuming high mortality, 25 assuming medium mortality and 23 assuming low mortality. The trend is similar for females under each of the three assumptions. Decreasing mortality rates tend to increase the length of life; the life expectancies at birth are predicted to be 66, 68 and 71 respectively for the assumptions mentioned.

Since the birth rate depends more on individual behavior, whereas the death rate is influenced by medical changes, the birth rate fluctuates more widely than the mortality rate. Birth rates have decreased at all ages, but the decline was not as great for the younger age groups.

Many forecasts of the future population of the United States have been made; most of the estimates have been too low. Louis I. Dublin, of the Metropolitan Life Insurance Company, in 1931 estimated that the population would be 148,000,000 by the year 1970, and it has already reached 143,000,000 in 1947. Many others have erred in predicting too low a figure, the notable exceptions being Professors Raymond Pearl and Lowell J. Reed of Johns Hopkins University, whose predictions have almost coincided with current population figures. In 1921 they estimated that there would be 149,000,000 by 1950; it now appears that this figure will be approximately realized.

Population trends have been showing a decrease in the relative number of young persons and an increase in the relative number of old persons, and this trend is expected to continue. The population of the United States is aging, as the increasing median age clearly shows. Even though the figures predict an increase in the size of the population when any one of the projections is used, the rate of increase is becoming smaller and smaller, and the results seem to point to a stationary or even a declining population.

Health Services in England. By R. C. Wofinden. Price, $2.50. Pp. 186. London, Simpkin Marshall, Ltd., 1947.

This essay by Dr. R. C. Wofinden is a well organized and concise presentation of the historical development of public health legislation in England. Its emphasis is on the administration of the laws as they affect the welfare of the people. The author has reached the conclusion that the course of social and health legislation has been guided by the increasingly popular demand that poverty alone should not stand in the way of decent housing, adequate health services and opportunity for advancement. It has been enacted not primarily for the benefit of the existing poor, but for the greatest good for the greatest number. Recognizing that continued sickness leads to inability to work and thus to poverty, the authors of the legislation directed it toward remedying the causes of illness and, recently, toward preventing sickness.

Measures to improve health may spring from several motives. The humanitarian impulse has motivated many needed reforms. The state has an interest in the preservation of the health of the people. War has often been the spur to research, improved technics and more efficient use of existing medical facilities.

The author has divided the history into three stages. First, the environment of the people was seen to bear directly on their level of health, and steps were taken to improve paving, lighting, water supplies and working conditions in factories and to protect the quality of food. Secondly, infectious diseases were brought under control by isolation, education of the people in cleanliness and nutrition, biologic experimentation and mass immunization. Thirdly, it was recognized that preventive medicine was essential to raise the general level of health. The overload on doctors who are pressed for time to give adequate treatment, let alone for preventive work, coupled with ignorance and apathy on the part of many who could be helped, has rendered progress in preventive medicine difficult.

Dr. Wofinden's approach to the history of public health legislation is to list specific measures passed by Parliament, discuss important provisions of the laws and relate each act to conditions existing in the country and to earlier laws. As previously stated, his emphasis is on the administrative procedure employed under each law. He thereby demonstrates clearly that the way in which a system is devised, the people who operate it and the agencies it uses to carry out its policies govern the effectiveness of public health measures.

The original essay was written in 1946 and has been made as complete as possible by the postscript containing the recent health act. In the small and readable volume Dr. Wofinden has surveyed the history of public health in England and has established some criteria for evaluating public health services.

Medical Motion Pictures

FILM REVIEWS

The Doctor. 16 mm., black and white, sound, 400 feet, showing time ten minutes. Prepared in collaboration with Louis W. Sauer, M.D., Northwestern University Medical School, Chicago. Produced in 1947 by and procurable on rental or purchase from Encyclopedia Britannica Films, Inc., 1150 Wilmette Avenue, Wilmette, Ill.

This motion picture depicts the role of a pediatrician in his office, at the hospital and at the home of a patient. He is shown, assisted by his office nurse, performing a routine physical examination of a young boy and vaccinating a baby for smallpox. The film then shows him making his rounds in the hospital, visiting his patients to determine the progress of each. Finally he visits a patient in a private home, at which time he makes an examination for diagnosis, prescribes for the patient and gives the mother instructions as to care.

The film also illustrates the use of such instruments as the stethoscope and blood pressure apparatus and shows how the doctor interprets the results of the roentgen examination in the diagnosis of a fracture. Other illustrations are presented which would aid in acquainting the child with the activities of a doctor in such a way as to eliminate any fear a child may have when medical care is necessitated.

In the part showing the doctor taking the temperature of a child with measles, an error in technic was noted. The doctor took the thermometer out of his bag, laid it on the bed of the patient and then inserted it in the patient's mouth. After the thermometer was withdrawn from the patient's mouth, it was replaced in its container immediately without being sterilized.

The film is suitable for showing to children in the elementary school level.

The photography and narration are excellent.

Skin Antiseptics, Evaluation of Effectiveness of Some Widely Employed Antiseptics. 16 mm., black and white, sound, 1,125 feet (1 reel), showing time twenty-eight minutes. Produced in 1948 by Audio Productions, Inc., New York. Procurable on loan from Iodine Educational Bureau, Inc., 120 Broadway, New York 5.

The efficiency of iodine as an antiseptic agent for preoperative preparation of the skin is compared with organic mercurial compounds. The results and calculated dilution values of numerous in vitro tests of several commonly used antiseptics are presented. In the phenol coefficient test, an antiseptic is simultaneously tested and compared with phenol under identical conditions against standard test bacteria Staphylococcus aureus and Salmonella typhosa. The weakest dilution of the antiseptic which will kill the standard test culture is ascertained by mixing certain proportions of the various dilutions of antiseptic with a broth culture of the test organism and allowing the mixture to stand for varying periods of time at a designated temperature. At specified intervals, portions of the

mixture are transferred to tubes containing broth and incubated for forty-eight hours. Bacteriostasis is differentiated from bactericidal action by subculturing in a medium containing a neutralizing agent. The effective dilutions of an antiseptic against the micro-organism are revealed in the tubes in which no bacterial growth occurs. The detrimental effect of organic matter (blood serum) on the activity of all antiseptic agents is shown but is inadequately stressed. An in vivo technic incorporating intraperitoneal implantation of treated and untreated mouse tails is given. In the final analysis topical application on human skin is demonstrated and the efficacy of the agents determined by scraping with sterile knife blades which are subsequently cultured in broth.

Toxicity tests are shown in which chick embryos and skins of rabbits and guinea pigs were utilized. Histologic sections show that the antiseptics were nonirritating. The authors correctly emphasize that no single test yields consistently accurate results.

With practically no exceptions, iodine is shown to have more bactericidal effect than any of the other agents. The efficiency of soap and water cleansing is minimized. One error in technic occurs in demonstrating the agar-cup plate method in that, after the plug of agar is cut out of the medium, the cup is not sealed with a small amount of melted agar before the antiseptic is added.

The usefulness of this film is somewhat limited. It would be of interest as a summary for a series of lectures on bacteriologic technics or to surgeons who are particularly interested in skin asepsis. Several titles are superimposed over the background of periodicals and bottles. Some of these titles are difficult to read because they blend in with the background. Otherwise, the photography and narration are excellent. The photomicrographs illustrating the results of various tests and the split frame technic are especially impressive.

Getting Ready for the Dentist. 16 mm., black and white, sound, 325 feet, showing time ten minutes. Prepared in 1947 by Alice V. Keliher, Ph.D., with the cooperation of Dr. Arthur A. Friend, New York University. Procurable on rental from New York University Film Library, 26 Washington Place, New York 3, or on purchase from Willow Distributing Co., Inc., 551 Fifth Avenue, New York 16.

This film shows how a child of 3 years may be prepared for a visit to the dentist through the thoughtful cooperation of parents and the dentist. Through a visit to the dentist to watch Mother have a roentgenogram, the small girl becomes acquainted with the equipment used there. At home Mother and Father play "dentist" with her until the steps in roentgen examination become part of her familiar everyday experience. She returns to the dentist's office for her own roentgenogram and goes through the experience with a minimal amount of disturbance.

The authors are to be commended on the gravity of the small child who plays "Helen"; it is much more reassuring to parents to see a grave, somewhat timid child responding to this type of treatment.

Much emphasis is placed on the adjustment of a child to roentgen examination of the teeth.

This motion picture should interest Parent-Teachers Association and child guidance groups.

The photography is good, but the narration is poor and the quality of the voice is unsatisfactory. The voice level drops at the end of most sentences.

Safer Gastrectomy Operative Procedure. 16 mm., color, sound, 475 feet (1 reel), showing time eleven minutes. Prepared by L. A. Alesen, M.D., F.A.C.S., Los Angeles. Produced in 1946 by Billy Burke Productions, Hollywood. Procurable on loan from the Seal-Ins Laboratories, 2857 East Eleventh Street, Los Angeles 23.

This picture illustrates the use of an Alesen T-tube in conjunction with a subtotal gastrectomy in order to prevent obstruction of the afferent loop of jejunum and to cut down the chances of disruption of the duodenal stump. The technic of doing a subtotal gastrectomy is well shown on a cadaver, and toward the end of the film certain pertinent points in the use of the Alesen T-tube are shown in an actual operative procedure.

The film is satisfactory for the purpose for which it is designed and may be of use in safeguarding against disruption of the duodenal stump by prevention of kinking of the afferent loop. The tube is sterilized in a benzalkonium chloride solution 1 to 1,000 for 15 minutes at room temperature and disintegrates in about 96 hours. Serial roentgenograms are shown to illustrate the disintegration.

From a technical point of view, if the film is used in conjunction with a lecture or conference on gastrectomy, it would be satisfactory for showing to general surgeons, medical students, interns and residents.

The surgical technic as illustrated is good. The photography is excellent.

Diseases of the Gallbladder. A Photographic Supplement for Lectures or Conferences. 16 mm., color, silent, 400 feet, showing time sixteen minutes. Prepared in 1949 by Hilger Perry Jenkins, M.D.; Rudolph Janda, M.D., and Douglas Packard, M.D., Department of Surgery, University of Illinois, College of Medicine, and Woodlawn Hospital, Chicago. Procurable on loan from Hilger Perry Jenkins, M.D., 826 East Sixty-First Street, Woodlawn Clinic Building, Chicago 37.

This motion picture illustrates cases with various pathologic conditions of the gallbladder. Pertinent facts in the case histories are presented, and the roentgenographic observations are well demonstrated. An attempt is not made to show the complete story as to causation, diagnosis, treatment, prognosis, complications and the like. The picture shows the nature of the condition as seen at the operating table or in the pathologic laboratory.

This film can be recommended as an adjunct to a lecture or conference on gallbladder diseases to general surgeons, residents, interns and medical students. The film is well captioned and the photography is good.

Let's Look at Water. 16 mm., black and white, sound, 776 feet (1 reel), showing time twenty minutes. Produced in 1947 by the National Film Board for the Department of National Health and Welfare, Ottawa. Procurable on rental or purchase from the National Film Board of Canada, 620 Fifth Avenue, New York 20 and 400 West Madison Street, Chicago 6.

This motion picture illustrates the functions of a water purification system. It shows how water serves all forms of life, demonstrating ways water can be contaminated and how water may be a source of disease. There seems to be much extraneous material in the film, which includes a considerable amount of stock footage on India and China and several close-ups of still pictures. A little judicious editing would improve the picture. This is an excellent informational film to be used for adult study groups, high school and college students studying water purification. It could not be used effectively in such groups as parent-teachers' association and women's clubs, since it is technical in sections, and some of the procedures are not applicable in the United States. The photography and narration are good.

Manson's Blood Fluke. 16 mm., black and white, sound, 592 feet (1 reel), showing time nineteen minutes. Produced in 1948 by and procurable on loan from the Federal Security Agency Public Health Service, Communicable Disease Center, 605 Volunteer Building, Atlanta 3.

This motion picture depicts in detail the life cycle of the parasitic blood fluke Schistosoma mansoni. It shows the ciliated miracidia hatching from spined eggs and penetrating certain Planorbid snails. Within the snail each miracidium becomes a primary sporocyst. Germ cells of the primary sporocyst grow into secondary sporocysts, which in turn produce thousands of cercariae. The cercariae escape from the snail into the water. The mode of infection is clearly presented by showing the parasites penetrating human skins, migrating through the blood vessels to the lungs and traveling to the portal veins of the liver, where they reach maturity. The adult worms live in the mesenteric veins of the colon, feed on blood and lay eggs within the blood vessels. Some of the ova escape through the bowel mucosa into the fecal mass, while others remain in the bowel wall and cause scarring and others migrate to the lungs from the hemorrhoidal veins and cause fibrosis. Clinical cases are shown in their native environment. In 1 case, the patient is followed to the postmortem table. The film ends with a recapitulation of the major concepts which serves to unify the whole. The geographic distribution of this infection is not mentioned. It is really needed to complete the picture. This is an excellent teaching film for general practitioners, parasitologists, postgraduate students and medical students. The photography and animation are well done.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

18:209-232 (Feb.) 1949

Answers to Some Questions in Venereal Serology. H. P. Sawyer. —p. 209.
Possible Application of XYZ Factors in Biologic Classification of Tumor Cells. A. E. Casey.—p. 213.
Inversions and Ruptures of Uterus. J. E. Garrison.—p. 216.

18:233-268 (March) 1949

The Future of Isotopes in Medicine and Surgery. H. Acuff.—p. 233.
Major Neuralgias. W. G. Haynes.—p. 242.
Practical Management of Acne. P. G. Reque.—p. 247.

American Journal of Clinical Pathology, Baltimore

19:99-200 (Feb.) 1949

Dynamic Equilibrium. P. R. Cannon.—p. 99.
Outline for Identification of Salmonellas. O. Felsenfeld.—p. 106.
*Aminopterin® (Folic Acid Antagonist) in Treatment of Leukemia. L. M. Meyer, H. Fink, A. Sawitsky and others.—p. 119.
*Use of Folic Acid Antagonist in Chronic Leukemia. L. Berman, A. R. Axelrod, E. C. Vonder Heide and E. A. Sharp.—p. 127.
Further Evidence for Antibodies of Third Order: Fractionation of Agglutinins, Blocking Antibodies and Cryptagglutinoids by Physicochemical Methods. J. M. Hill, S. Haberman and Ruth Guy.—p. 134.
Method for Quantitative Measurement of Complement Fixation. E. E. Ecker and C. W. Hiatt.—p. 141.
Pooled Sheep Cells for Use in Hemolytic System of Complement Fixation Test. Thelma F. Muraschi and V. N. Tompkins.—p. 152.
Specificity of Cardiolipin Antigens in Tests for Syphilis. Sara C. McDearman and J. E. Cottrell.—p. 156.
Studies on Phagocytosis. II. R. Altschul and Aganeta M. Friesen. —p. 163.
Phosphatases in Blood of Man: Values in Whole Blood, Plasma, Cytolysates and Erythrocytic Suspensions. H. Behrendt.—p. 167.

Aminopterin® in Leukemia.—Meyer and his associates report observations on 43 patients with leukemia, who were treated with aminopterin® (4-aminopteroylglutamic acid). Only 4 patients showed improvement in hematologic and clinical pictures. The 4 improved patients were children; 3 had leukemia of the acute lymphoid type and 1 of the acute myeloid type. Of the other 39 patients, 15 showed toxic effects of the drug, necessitating discontinuance of treatment, and in the remaining 24 the clinical course was unaffected. Beneficial and toxic effects could not be related to dosage according to weight or to the simultaneous administration of liver extract or teropterin® (sodium pteroyl triglutamate). The unpredictable action of aminopterin® and its evident toxicity indicate that this drug will have limited use in the treatment of leukemia. Other related less toxic compounds may be of greater value.

A Folic Acid Antagonist in Chronic Leukemia.—This study by Berman and co-workers is based on observations of the effect of the folic acid antagonist aminopterin® (4-aminopteroylglutamic acid) in 9 patients with chronic leukemia. One of the patients with myelogenous leukemia received two series of treatments. The drug was taken orally in daily doses ranging from 1.25 to 7.5 mg. over periods of six to twenty-five days. Stem cells, granulocytes and immature lymphocytes decreased in number during treatment, but mature lymphocytes were relatively unaffected. There was no regular effect on the erythrocyte and platelet counts. There was a disturbance of erythropoiesis characterized by the appearance of megaloblasts in the marrow of treated patients, reflecting folic acid deficiency produced by the use of the folic acid antagonist. Although 4-aminopteroylglutamic acid has a definite hematologic effect, there was no subjective improvement in any of the patients. The use of the drug in chronic leukemia is limited by the early development of toxic phenomena.

American Journal of Psychiatry, New York

105:561-640 (Feb.) 1949

Current Developments and Problems in Military Neuropsychiatry. J. M. Caldwell Jr.—p. 561.
Involutional Psychoses: Sociopsychiatric Follow-Up Study. W. Malamud, S. L. Sands, Irene T. Malamud and P. J. P. Powers.—p. 567.
Comparative Lymphocytic and Biochemical Responses of Patients with Schizophrenia and Affective Disorders to Electroshock, Insulin Shock and Epinephrine. E. H. Parsons, E. F. Gildea, Ethel Ronzoni and S. Z. Hulbert.—p. 573.
*Psychosurgery: Retrospects and Prospects Based on Twelve Years' Experience. W. Freeman.—p. 581.
Influence of Electroconvulsive Treatment on Blood Sugar, Total Number of Leukocytes and Lymphocytes. K. Stern, Brigitte A. Askonas and A. M. Cullen.—p. 585.
New Possibilities in Private Psychiatric Practice. E. P. Oberndorf. —p. 589.
Insanity Plea in Crime: Evaluation of 1927 Law. C. A. Rymer. —p. 594.
Aspects of Concentration Camp Psychology. P. Friedman.—p. 601.
Evaluation of Psychiatric Examination. O. Diethelm.—p. 606.
Psychologic Significance of Physical Restraint to Mental Patients. M. H. Erickson.—p. 612.
Clinical Importance of Some Normal Attitudinal and Ideologic Transitions of Midlife. E. G. Billings.—p. 615.
Sociopsychiatric Study of Twenty-Five Young Offenders. E. T. Adelson, C. Sugar and S. B. Wortis.—p. 619.
Hypnosis in Electric Shock Treatment. L. T. Maholick and J. Warkentin.—p. 623.

Psychosurgery.—Freeman mentions some of the newer psychosurgical operations and discusses the considerations that should influence the psychiatrist in his choice of operation. The mortality rate and the incidence of convulsive seizures have to be considered. Prefrontal lobotomy has a fatality rate in the neighborhood of 3 per cent. The open operation in the hands of skilled surgeons like Love and Poppen has seen a reduction below 2 per cent. No fatalities have followed topectomy and only one in a series of more than 200 transorbital lobotomies. Operative mortality statistics with regard to other operations are not adequate because of the small number of cases. Convulsive seizures follow any injury to the brain in a certain percentage of cases. In lobotomy the liability to convulsions is directly proportional to the amount of damage. Convulsions are not necessarily disabling, and they tend to disappear in the course of time and with medicinal treatment, but they are embarrassing to the surgeon and distressing to the families of patients. Incidence of convulsive seizures cannot be adequately estimated until some five years have elapsed after operation.

Annals of Surgery, Philadelphia

129:289-416 (March) 1949

*Massive Hematemesis: Analysis of 300 Consecutive Cases. C. Costello. —p. 289.
*Management of Bleeding Duodenal Ulcers. R. W. Fraser and J. P. West.—p. 299.
Effect of Injury on Wound Healing. P. Sandblom.—p. 305.
Surgical Management of Chronic Recurrent Intestinal Obstruction Due to Adhesions. J. W. Lord Jr., E. L. Howes and N. Jolliffe.—p. 315.
Wedge Osteotomy for Fresh Intracapsular Fractures of Neck of Femur. A. F. DePalma.—p. 323.
Tissue-Culture Evaluation of Viability of Blood Vessels Stored by Refrigeration. E. C. Peirce II, R. E. Gross, A. H. Bill Jr. and K. Merrill Jr.—p. 333.
Medical and Surgical Treatment of Hypertension. F. L. Reichert, V. Richards, E. Holman and others.—p. 349.
Control of Hemorrhage from Wounds of Coronary Vessels by Gelatin Sponge Patch Technic: Experimental Study. H. Reiser, D. S. Fox and H. P. Jenkins.—p. 358.
Total Gastrectomy for Carcinoma of Stomach. J. P. West.—p. 373.
*Chemosurgical Treatment of Tumors of Parotid Gland: Microscopically Controlled Method of Excision. F. E. Mohs.—p. 381.
Resection of Sternum for Metastatic Carcinoma. D. A. Campbell.—p. 394.
Hypernephroma Metastatic to Thyroid Gland: Report of Case. G. R. Denton and J. C. McClintock.—p. 399.
Retrograde Intragastric Intussusception of Jejunum Following Subtotal Gastrectomy: Report of Case, Apparently Second Such in Literature. A. E. Grimes.—p. 404.
Wandering Spleen: Report of Case Complicated by Traumatic Cyst. M. L. Dowidar.—p. 408.

Massive Hematemesis; Analysis of 300 Cases.—Costello says that in the management of massive hematemesis one encounters a divergence of opinion as to whether treatment should be medical or surgical. Other problems in therapy include those concerning the advisability of using gastric siphonage, oral feeding, blood transfusions and sedation. The author studied 300 patients who had had massive hematemesis. Chronic duodenal ulcer accounted for 171 of the 300 patients with massive hematemesis. Acute gastritis, chronic gastric ulcer,

ruptured esophageal varix, chronic gastritis and gastric carcinoma were the causes in other patients. Of the 75 patients who died, 71 had not received adequate blood replacement. Therapy should primarily be directed not toward surgical closure of the injured vessel, which natural processes often will close spontaneously, but toward support of the depleted blood volume. The theory that restoring blood pressure risks "blowing out" a forming thrombus has no scientific proof. During the past two years, 73 patients were treated by prompt blood replacement. Operative intervention was not undertaken. Feeding varied between the Meulengracht diet, the Sippy diet, liquid diet and protein dextrimaltose ("predigested") liquids. Only 4 per cent of this group of 73 patients died as compared with 25 in the 300. The author recommends the following plan for the treatment of massive hematemesis during the actively bleeding stage: (1) careful determination of blood needs by the copper sulfate falling drop method repeated frequently; (2) complete restoration of blood as promptly as possible; (3) oral administration of predigested protein-carbohydrate-vitamin mixture, and (4) adequate sedation. After control of hemorrhage and the restoration of nutrient and blood essentials, the advisability of elective surgical intervention may be determined more easily. The authors advise against surgery, indwelling stomach tube with constant suction, gastric lavage and active diagnostic studies during the bleeding stage because these measures were shown to increase mortality.

Management of Bleeding Duodenal Ulcers.—According to Fraser and West, opinions are changing with regard to the urgency of immediate surgical intervention in bleeding duodenal ulcers. They reviewed the records of 177 patients with severe bleeding from duodenal ulcers. The diagnosis was established by roentgenography, operation, or, in the fatal cases, by necropsy. The criteria of severe bleeding were a drop in hemoglobin to 65 per cent or less and a reduction in red cells to 3,500,000, or less. One hundred and eight of these patients had a hemoglobin level of less than 50 per cent and a red cell count of less than 2,500,000. Among the 177 cases there were 11 deaths, a mortality rate of 6.2 per cent. One hundred and sixty-five patients were treated by nonoperative measures with 7 fatalities, a mortality rate of 4.2 per cent. Twelve patients did not show a satisfactory response to conservative treatment, and all were operated on in the late period; that is, after more than forty-eight hours of rapid blood loss. Four of these died, a mortality rate of 33.3 per cent. The authors cite figures which indicate that age is of some importance in estimating the chance of survival of a patient under conservative treatment. Of patients beyond 50 years of age who died of hemorrhage, the advent of the bleeding phase of the ulcer generally was accompanied by additional pathologic conditions which contributed materially to the ultimate demise. Arteriosclerosis appeared to be one of the most important contributary causes of death.

Chemosurgical Treatment of Tumors of Parotid Gland.—Mohs stresses that in the treatment of tumors of the parotid gland complete removal of the neoplasm must be combined with the preservation of as much as possible of the facial nerve, which traverses the parotid gland. The attainment of these goals is facilitated by the use of the chemosurgical technic. Application of this method in the treatment of cancer of the lip, nose, ear, eyelid, face, extremities, trunk and skin has been described earlier. The author reports a man, aged 80, with a deep-seated mass just below the ear. Premedication with 0.015 Gm. of morphine sulfate was followed in his case by application of the keratolytic dichloracetic acid. Whitening of the skin indicated when the keratin layer had been penetrated. The zinc chloride fixative paste was then applied in a thickness of about 3 mm. The paste contained stibnite (80 mesh sieve), 40 Gm., powdered sanguinaria, 10 Gm., and saturated solution of zinc chloride, 34.5 cc. The treated area was covered with cotton and a moisture-tight closure. After twenty-four hours a layer about 1 cm. thick was excised. There was no pain or bleeding, because the incision was made through killed and fixed tissue. Frozen sections revealed the presence of squamous cell carcinoma with grade 3 malignancy. During the next four days the tumor mass was removed in successive layers. On the fifth day it became impossible to differentiate grossly between normal and cancerous tissues. The layers of tissue from the areas in question were divided into specimens of convenient size; frozen sections were cut and scanned under the microscope and the areas of cancer were marked on a map corresponding to a map drawn on the lesion. Reapplication of the fixative was then limited to the areas demonstrated to be cancerous. This process was repeated daily until the twentieth day, when the removal of the last extension of the cancer was completed. In some areas the microscopically visualized extensions of the neoplasm extended more than 2 cm. beyond the grossly visible portion. One extension followed the perineural lymphatics of the auriculotemporal nerve, while another followed the perimesium of the stylohyoid muscle. Without the systematic microscopic control afforded by the chemosurgical method these extensions would have been missed. On return for checkup two months later the lesion had completely healed with a fine linear scar. The patient was free of cancer when last seen seven years later. Despite the extensiveness of the lesion there was no facial nerve paralysis except for the unimportant mandibular branch. Thirteen of the 17 patients treated by this method had carcinoma and 4 had benign mixed tumors of the parotid gland. The rate of cure in the patients with carcinoma was 60 per cent in the five year period of observation. All of the patients with benign mixed tumor of the parotid gland were successfully treated.

Archives of Internal Medicine, Chicago

82:113-216 (Aug.) 1948

Acute Diffuse Interstitial Fibrosis of Lungs: Report of Case. B. P. Potter and I. E. Gerber.—p. 113.
*Clinical Experience with Nitrogen Mustard Therapy. R. Goldman, R. O. Egeberg, E. R. Ware and others.—p. 125.
Osteopetrosis. W. J. Cassidy, F. C. Allman and G. J. Keefe.—p. 140.
*Association of Hepatic Insufficiency with Chronic Ulcerative Colitis. H. M. Pollard and M. Block.—p. 159.
Study of Tremor in Soldiers. J. J. Silverman.—p. 175.
Pernicious Anemia in Tropical Negro. S. P. Zimmerman and S. Dugger.—p. 184.
Clinical Observations in Cases of Massive Myocardial Infarction. A. Selzer.—p. 196.
Primary Malignant Disease of Small Bowel. D. S. Likely, J. R. Lisa, M. H. Stitch and H. D. Stein.—p. 206.

Clinical Experience with Nitrogen Mustard.—The Veterans Administration Hospital, West Los Angeles, Calif., has been designated as a center for the treatment of tumors. This provided a relatively large number of patients with leukemia and lymphoma. Goldman and co-workers treated 40 male patients with Hodgkin's disease, lymphosarcoma, leukemia and related diseases with bis-beta-chloro-ethyl-amine hydrochloride (nitrogen mustard). The results obtained are similar to those reported in the literature. Nitrogen mustard appears to be an effective drug in the treatment of Hodgkin's disease, and in some cases of lymphosarcoma, leukemia, mycosis fungoides and polycythemia vera. It appears to offer symptomatic relief in some instances of terminal and metastatic carcinoma of diverse origin. The therapeutic application of the drug results in a prompt response which is more rapid than that which occurs after roentgen therapy, but the remission produced is of much shorter duration.

Association of Hepatic Insufficiency with Chronic Ulcerative Colitis.—Pollard and Block say that study of hepatic function in patients with chronic idiopathic ulcerative colitis by means of the bromsulfalein test, cephalin-cholesterol flocculation test, prothrombin time and serum protein revealed the presence of hepatic insufficiency in approximately 50 per cent of the 70 cases investigated. The bromsulfalein and cephalin-cholesterol flocculation tests appeared the most satisfactory indicators of hepatic insufficiency. In 11 of 17 cases of chronic ulcerative colitis studied post mortem, there was histologic evidence of a hepatic pathologic process. Degenerative fatty infiltration was most common, but definite cirrhosis was present in 2 instances. Four cases of cirrhosis of the liver associated with chronic ulcerative colitis are reported. In 2 instances the cirrhosis had its onset prior to the colitis and was probably not related etiologically to the latter. In the other 2 cases the cirrhosis had its onset after the colitis. Evidence is presented to indicate that hepatic insufficiency in association with ulcerative colitis probably has its origin in fatty changes in the liver that occur as a consequence of severe malnutrition or toxemia or both.

Archives of Neurology and Psychiatry, Chicago

61:1-98 (Jan.) 1949

*Cerebral Injuries Due to Explosion Waves—"Cerebral Blast Concussion": Pathologic, Clinical and Electroencephalographic Study. F. Cramer, S. Paster and C. Stephenson.—p. 1.
*Vocalization and Arrest of Speech. W. Penfield and T. Rasmussen.—p. 21.
Peliodystrophia Cerebri Progressiva (Infantilis): Report of Case. E. Christensen and K. H. Krabbe.—p. 28.
Effect of Carbon Dioxide on Acrocyanosis in Schizophrenia. M. D. Altschule and W. M. Sulzbach.—p. 44.
Paroxysmal Lacrimation (Syndrome of Crocodile Tears) and Its Surgical Treatment: Relation to Auriculotemporal Syndrome. F. C. Boyer and W. J. Gardner.—p. 56.
Meningosarcoma with Pulmonary Metastasis: Report of Case. A. J. Swingle.—p. 65.

Cerebral Blast Concussion.—Cramer and co-workers state that trauma to the cerebrum comprehended by the term "cerebral blast concussion" may vary from true "commotio cerebri" to multiple petechial hemorrhages of the brain or to actual contusion. The term "blast" refers to the wave of intensely positive pressure produced by a high explosive, just outside the "zone of brisance," within which everything is disintegrated. Just beyond that zone the blast wave has traumatic effectiveness, but thereafter it becomes merely a sound wave. Most of the cases on which this report is based were those of men evacuated from the front with neuropsychiatric problems. In about half of them the primary diagnosis was "psychoneurosis." The diagnosis of chronic subdural hematoma was suspected in some on the basis of a persistent headache, abnormalities of the reflexes, inequalities of the pupils and, rarely, a shift of the pineal gland to one side of the midline, as seen in roentgenograms. In some cases surgical explorations had ruled out hematoma. A psychiatric approach was used during the early observation in most. In the Zone of the Interior, patients who were suspected of having sustained organic lesions were examined as carefully as though one were searching for cerebral tumor. The authors present a detailed history of one patient who had sustained cerebral concussion from a nearby mortar shell blast. The patient exhibited prolonged unconsciousness, amnesia, post-traumatic headache, dizziness, irritability and intolerance to noises. Death followed three months later of delayed post-traumatic cerebral hemorrhage from an area of post-traumatic encephalomalacia. The authors point out that most of the reports on "blast injury" in the literature deal with injuries to the abdominal and thoracic viscera. In these cases of severe injury, the mental disturbances and the lesions in the brain are often commented on only incidentally. The authors made electroencephalograms on 441 cases in which the clinical diagnosis of "blast concussion" had been made. Unconsciousness had occurred in 329 cases. Bleeding from the ears or nose, rupture of the drum membrane or conjunctival hemorrhages occurred in 77 cases. In 5 cases convulsive seizures followed exposure to blast. The electrocardiograms of the 441 patients who were exposed to blast concussion showed a significantly higher incidence of borderline and abnormal tracings than was found in 140 control subjects. The authors feel that their observations are consonant with the facts reported by others who assert that blast concussion is a definite clinical and pathologic entity.

Vocalization and Arrest of Speech.—Penfield and Rasmussen record observations on (1) vocalization as a response to stimulation of the human cerebral cortex and (2) arrest of speech by means of stimulation. They have supplemented these observations by reference to the effect of excision of areas of sensorimotor convolutions in the dominant or the nondominant hemisphere. They gained the impression that there is a zone in the sensorimotor convolutions of each hemisphere in which vocalization, lip movement and tongue movement are represented bilaterally. These areas may be called the word articulation zones. If one zone is removed, the functional activity of the other makes speech possible, although there may be transient anarthria. Evidence indicates the presence of a frontal speech area and a parietal speech area in the dominant hemisphere. The functional integrity of these two areas is essential to the mental processes involved in speaking. These two speech areas might be considered a second motor and a second sensory area corresponding to the sensorimotor zone for lips, tongue and vocalization. But the essential neuronal connections between these second speech areas and the sensorimotor zone are not transcortical, as shown by the fact that the face area, as well as the dominant arm area, can be removed without producing aphasia. Consequently, the essential neuronal connections of the second speech areas must be via subcortical pathways to the sensorimotor word articulation area of the rolandic convolution on both sides.

Archives of Ophthalmology, Chicago

41:1-124 (Jan.) 1949

Beta Radiation Therapy. A. D. Ruedemann.—p. 1.
Motor Block of Extraocular Muscles by Deep Orbital Injection. H. Gifford Jr.—p. 5.
Responses to Ishihara Test for Color Perception. J. B. Nolasco and D. Rodil.—p. 20.
Interstitial Keratitis and Vestibuloauditory Symptoms Following Vaccination. E. Rosen.—p. 24.
*Retinoblastoma (Retinal Glioma) Cured by Radon Seeds: Report of Case. J. Waldman and C. E. G. Shannon.—p. 32.
Mydriatics: Clinical Observation. J. B. Feldman.—p. 42.
Malignant Retrobulbar Neuritis. A. Fuchs.—p. 60.
Technic of Gomiotomy for Congenital Glaucoma. O. Barkan.—p. 65.
Use of Propionates in Ophthalmology: Preliminary Report. F. H. Theodore.—p. 83.

Retinoblastoma Cured by Radon Seeds.—Waldman and Shannon report a patient in whom retinoblastoma had been verified by microscopic and gross study of the enucleated eye. The patient has been treated and observed for twelve years. Retinoblastoma in the remaining eye has been treated, with cure for a period of nine years. Enucleation of the left eye was performed in 1935, when the patient was 18 months of age. The optic nerve was microscopically free of tumor cells. Roentgen rays were given to the right eye. The total of 3,104 r given was far below the dose advised by the fractionated method of Martin and Reese. In November 1938, 2.5 millicuries of radon was applied in dental compound and sewed to the overlying sclera. Five applications of radon seeds were used in a holder from March 1939 to May 1942. The patient was 10 months old when treatment was instituted and is 13½ years old at the time of this report. Typical irradiation cataract and changes in the fundus, probably incidental to radon therapy, are described. Visual acuity is 6/60. The patient attends a sight-saving school. The changes in the lens, and perhaps the macular changes, may become more pronounced. In retrospect, the areas thought to be new growths in April 1942 may have been a late reaction to the radon applied previously.

Archives of Pathology, Chicago

46:289-400 (Oct.) 1948

Sarcoidosis Involving Heart: Report of Case with Sudden Death. T. M. Scotti and C. E. McKeown.—p. 289.
*Chronic Inflammatory Lesions of Skeletal Muscle in Rheumatoid Arthritis and in Other Diseases. M. A. Ogryzlo.—p. 301.
*Plasma Cell Mastitis. Béla Halpert, J. M. Parker and J. M. Thuringer.—p. 313.
Quantitative Approach to Study of Splenomegaly. A. J. Gordon, E. C. Holder and S. Feitelberg.—p. 320.
*Viral Versus Toxic Hepatic Necrosis. H. Popper and M. Franklin.—p. 338.
Hepatic Heterotopy in Splenic Capsule. G. J. Heid Jr. and E. Von Haam.—p. 377.
Medionecrosis of Aorta. G. D. Amromin, J. G. Schlichter and A. J. L. Solway.—p. 380.
Mammary Lipoma. C. G. Tedeschi.—p. 386.
Absence of Renal Lesions in Rats Receiving Synthetic Diet Low in Protein. Elizabeth Lowenhaupt.—p. 398.

Chronic Inflammatory Lesions in Rheumatoid Arthritis.—Ogryzlo states that in 1945 Freud and associates described small inflammatory nodules in the muscles of amputated lower limbs of a patient with rheumatoid arthritis and substantiated this finding by consistently demonstrating lesions in biopsy specimens from 14 patients with typical rheumatoid arthritis. These authors and others regarded the lesion as specific and essential in rheumatoid arthritis. They considered the associated muscle degeneration as a consequence of the inflammatory lesion. The application of this new finding as an aid to diagnosis was advocated. The present study was undertaken to determine the specificity of the lesion. Sections of skeletal muscle taken routinely during the past ten years in the departments of pathology, surgical pathology and neuropathology of the Toronto General Hospital were reviewed, as well as addi-

tional sections obtained in a group of selected cases. The latter were chosen from among cases of disease in which pathologic changes of muscle might be expected to occur. A total of 158 cases were examined. Ogryzlo says that inflammatory lesions of skeletal muscle of the type which have recently been described in patients with rheumatoid arthritis were also found in patients with rheumatoid arthritis, dermatomyositis, periarteritis nodosa, disseminated lupus erythematosus and subacute bacterial endocarditis. Indistinguishable lesions were also encountered in cases of Addison's disease, hyperthyroidism, myasthenia gravis, fascioscapulohumeral atrophy, subacute combined degeneration and peripheral neuritis. The lesions were marked by focal, perivascular or, occasionally, more diffuse collections of cells. The cells were mainly lymphocytes and a few plasma cells. Polymorphonuclear leukocytes, eosinophils and large, pale mononuclear cells were present in varying proportions. The lesions are regarded as nonspecific in character. They showed no constant relationship to the degree of degenerative change present in the muscle.

Plasma Cell Mastitis.—According to Halpert and associates plasma cell mastitis was first described in 1931 and later recognized as a pathologic entity. Since then 45 cases have been reported, but in none of them was the disease associated with carcinoma of the mammary gland. In 1947, Gaston reported cases in which the concurrence with carcinoma was mentioned. The authors present 3 patients with plasma cell mastitis and 3 patients with carcinoma of the mammary gland in whom there was cellular reaction with plasma cells predominating about acini and ducts believed to be independent of the carcinoma. Plasma cell mastitis may be redefined as a focal chronic inflammatory process in the mammary gland. Plasma cells are dominant in the inflammatory process and far outnumber all the other cells participating in the reaction. The cause of the lesion is unknown. Multiple areas of fat necrosis often accompany plasma cell mastitis. In the 3 cases of plasma cell mastitis there were areas of fat necrosis; either fat necrosis, or plasma cell mastitis alone, or both in combination form a solid mass, indefinitely delineated, not unlike carcinoma. In the 3 cases of carcinoma of the mammary gland there was a cellular reaction in which plasma cells predominated. The fact that most of the cellular reaction was about the acini and ducts of the mammary gland and in areas distant from the neoplastic involvement favors the view that the plasma cell reaction was independent of the carcinoma. Accurate history may aid in the differential diagnosis. A firm mass appearing in the mammary gland following trauma and persisting for years with no appreciable change in size suggests fat necrosis. A firm mass appearing in the mammary gland without a history of trauma and persisting for years with no appreciable change in size suggests plasma cell mastitis. A sudden increase in the size of either type of mass points toward a combination with carcinoma. The nature of the mass can be determined only by microscopic examination. Radical operation is indicated only in case the mass proves to be cancerous.

Virus Versus Toxic Hepatic Necrosis.—Popper and Franklin point out that epidemiologic considerations were primarily responsible for the acceptance of a viral causation of the different forms of hepatitis encountered in the armed forces in World War II. The question arises whether in the civilian population most instances of a similar clinical picture of primary acute hepatitis without known epidemiologic background are of the same, presumably virus, causation. The livers of patients dying of acute primary hepatic necrosis with jaundice in the past nineteen years in a large civilian institution (histologic material was available in 95 out of a total of 136 cases) were compared by the authors with those of a much smaller number of Army personnel. Among 18 of the military specimens 15 revealed various stages of epidemic hepatitis (as described by Luché), whereas 3 revealed a different histologic picture. Among 95 civilian specimens 26 showed changes comparable with those in the majority of the livers from Army personnel, whereas 69 revealed central, peripheral or fatty necrosis. The histories elicited from the patients of the latter group indicated that one fifth had been exposed to substances known to be hepatotoxic. The hepatitis of the former group was considered due to virus, whereas that of the latter was called toxic because it was morphologically similar to the pathologic process observed in man and animals following exposure to substances established as hepatotoxic. The "virus" form, which spreads irregularly throughout the liver, reveals sudden death of the liver cells. The cells break up into small fragments or hyalinize diffusely. This process is associated with an energetic mesenchymal reaction involving chiefly mononuclear phagocytosing cells. In the "toxic" form, in contrast, zonal arrangement is more prominent, the death of cells is gradual and large anuclear cell remnants or fragments are visible, which show shadows of cellular structure; the mesenchymal reaction is subdued, and the inflammatory cells, if present, are often polymorphonuclear; fatty changes are common. The liver is usually larger in the toxic than in the virus form. Renal damage, with azotemia, is greater in the acute toxic than in the acute virus form. In chronic phases of the virus form, "toxic" manifestations may appear in the preserved parenchyma, which may be due to anoxia caused by disturbances of the blood flow. An attempt is made to explain the difference of the morphologic pictures by different mechanisms and speeds of the "virus" and the "toxic" injurious process. Although the term "hepatitis" for these forms of hepatic necrosis appears unsatisfactory from a pathologic standpoint, it may for the time being be retained because of its widespread clinical use.

Arkansas Medical Society Journal, Fort Smith

45:147-164 (Jan.) 1949

Bronchiectasis. D. H. Shipp.—p. 147.
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45:165-184 (Feb.) 1949

Pioneer Doctors of Jefferson County. Mrs. R. D. Dickins.—p. 165.
Pioneer Doctors of Bradley County. Mrs. W. J. Hunt.—p. 168.
Cancer of Rectum and Pelvic Colon. H. E. Bacon and A. C. Hering. —p. 170.

45:185-216 (March) 1949

Gastroscopy: Diagnostic Aid. A. Kahn Jr.—p. 185.
Primary Pelvic Abscess Due to Staphylococcus Albus. H. S. Stern and H. J. Morris.—p. 187.

Cancer, New York

2:1-190 (Jan.) 1949

*Nitrogen Mustards in Treatment of Leukemia. J. H. Burchenal, W. P. L. Myers, L. F. Craver and D. A. Karnofsky.—p. 1.
Adenocarcinoma of Appendix. G. Lesnick and D. Miller.—p. 18.
Cancer of Colon and Rectum: Twelve-Year Survey of 142 Cases in a General Hospital. J. E. Bleicher.—p. 25.
*Reorientation on Histogenesis and Clinical Significance of Cutaneous Nevi and Melanomas. A. C. Allen.—p. 28.
Effect of Folic-Acid Derivatives on Sarcoma 180. E. B. Schoenbach, A. Goldin, B. Goldberg and L. G. Ortega.—p. 57.
Coexistent Bronchogenic Carcinoma and Active Pulmonary Tuberculosis. E. Robbins and Gertrude Silverman.—p. 65.
Comparative Thiamine Saturations in Women with Uterine Cancer and in Normal Women. J. W. Jailer.—p. 98.
Cancer Chemotherapy: Analysis of Results of Different Screening Technics with Nitrogen-Mustard Analogues. D. M. Shapiro, A. Goldin, B. H. Landing and others.—p. 100.
Studies on Chemotherapy of Leukemia: II. Effect of 4-Amino-Pteroylglutamic Acid and 4-Amino-N-methyl-Pteroylglutamic Acid on Transplanted Mouse Leukemia. J. H. Burchenal, J. R. Burchenal, M. N. Kushida and others.—p. 113.
Preliminary Studies on Effect of 2,6-Diaminopurine on Transplanted Mouse Leukemia. J. H. Burchenal, A. Bendich, G. B. Brown and others.—p. 119.
Alterations in Nucleic Acids During Hepatoma Formation in Rats Fed p-Dimethylaminoazobenzene. R. E. Stowell.—p. 121.
Histochemical Studies on Abnormal Growth of Human Endometrium: II. Cytoplasmic Ribonucleic Acids in Normal and Pathologic Glandular Epithelium. W. B. Atkinson, E. T. Engle, S. B. Gusberg and C. L. Buxton.—p. 132.
Thermal Irritation in Gastric Disease. R. E. Davis and A. C. Ivy. —p. 138.
Extramammary Paget's Disease of Perianal Skin. A. G. Foraker and C. J. Miller.—p. 144.

Nitrogen Mustards in Leukemia.—Burchenal and co-workers report their experiences with methyl-bis (beta-chlorethyl) amine (HN_2) or with the tris compound (HN_3) in the treatment of 38 cases of leukemia. They review 89 cases that have been reported in the literature. The authors also made clinical studies with four other nitrogen mustards, SK 136, SK 137, SK 437 and SK 596. With the possible exception of SK 136 none of these nitrogen mustards had any advantages over HN_2. In 54 of the total of 127 cases (38 of their own and 89 from

the literature), the disease was chronic myelocytic, in 45 chronic lymphocytic and in 28 acute leukemia. Occasional cases of chronic myelocytic leukemia have responded poorly to some other form of therapy and then responded well to HN_2 or SK 136. This is probably due not to a better inherent chemotherapeutic activity of the nitrogen mustards, but rather to the fact that the previously used agent was not, or could not, be pressed to full therapeutic effect, or, as occasionally happens with roentgen therapy, was not localized on the most important focus of the disease. Conversely, some cases responded better to a course of irradiation than to HN_2, and it is quite possible that some may also react better to urethane or arsenic. Most patients will probably respond about as well to any of the standard methods of therapy, but patients with disease refractory to one standard technic should be treated by another. The role of the nitrogen mustards in the treatment of chronic lymphocytic leukemia is less clearcut. The responses were much less regular and predictable than in the chronic myelocytic form of the disease. No real beneficial effect can be expected from HN_2 or SK 136 in the acute leukemias. In the final analysis, the nitrogen mustards NH_2, NH_3 and SK 136 are useful adjuncts to the treatment of leukemia, and approximately equal to arsenic, benzene, urethane, radiophosphorus and irradiation. In certain cases, however, there are definite advantages to the use of this method of chemotherapy.

Cutaneous Nevi and Melanomas.—Allen applies the term nevus only to the pigmented or nonpigmented lesions composed of melanoblasts, that is, dopa-positive cells containing the enzyme melanogenase. The term is not used in the dermatologic sense of any congenital blemish such as a "vascular nevus" or "sebaceous nevus." The unqualified term melanoma has come to be used interchangeably with malignant melanoma. The nevi include the following: (1) junctional nevus (dermoepidermal nevus or marginal nevus), (2) intradermal nevus (common mole or neuronevus), (3) blue nevus (Jadassohn-Tièche nevus), (4) compound nevus and (5) juvenile melanoma. The junctional nevus is derived from true epidermal cells. The cutaneous malignant melanomas arise from junctional nevi. Hence, malignant melanomas are epidermogenic and should be categorized as carcinomas for this reason rather than for reasons attributed to so-called neuroectodermal derivation. The junctional nevus as well as the seemingly anaplastic juvenile melanoma rarely are cancerous before puberty. In adults, about 12 per cent of the intradermal nevi are compounded with junctional nevi. The term "compound nevus" is suggested for such lesions. Evidence contradicts the impression that malignant melanomas arise from the common moles (intradermal nevi). When, as occurs in a minority of instances, a common mole is associated with a melanocarcinoma, the latter may be assumed to have grown from the overlying epidermal or junctional element of the compound nevus rather than from the intradermal nevus. The blue nevus and the mongolian spot are not epidermogenic but are most likely neurogenic. Because it may be assumed that nevi of the scrotum and of the palmar and plantar aspects of the extremities are junctional nevi, it would seem wise to remove such nevi prophylactically, preferably prior to puberty. The evaluation of the crucial transition from junctional nevus to malignant melanoma may require an extreme nicety of judgment. Criteria for this transformation in early or small lesions are described. Metastatic melanomas to the skin do not provoke the junctional change, and the absence of such change may be used reliably to differentiate a primary from a metastatic melanoma. Junctional nevi and small melanomas of the nipple of the breast may be easily confused histologically with Paget's disease. Similarly, many cases of so-called extramammary Paget's disease are in reality junctional nevi or melanomas.

Georgia Medical Association Journal, Atlanta

38:45-88 (Feb.) 1949

Congenital Metatarsus Varus. J. H. Kite.—p. 45.
Rehabilitation of Hand. A. M. Pruce.—p. 49.
Acute Acquired Hemolytic Anemia, Idiopathic Type: Report of Case in Negro. C. H. Carter, E. S. Armstrong and V. P. Sydenstricker. —p. 52.
Anemia in Labor. B. Traylor and R. Torpin.—p. 60.
Postpartum Hemorrhage. M. T. Benson Jr.—p. 69.
Cancer News. J. C. Norris.—p. 74.
New National Health Bill. E. H. Greene.—p. 75.

Illinois Medical Journal, Chicago

95:125-196 (March) 1949

*Treatment of Pneumonia by Single Injection Daily of Potassium Penicillin in Beeswax Peanut Oil Mixture. I. F. Volini, W. S. Hoffman and J. J. Hughes.—p. 147.
*Streptomycin and Penicillin in Febrile Obstetric and Gynecologic Conditions. H. C. Hesseltine.—p. 156.
Subarachnoid Hemorrhage. H. C. Voris.—p. 160.
Acute Intrapartum Inversion of Uterus. H. L. Allen, F. A. Morrison and F. C. Atwell.—p. 167.
Constrictive Calcified Pericarditis in Diabetic: Case Reports. E. Bruch and T. Lang.—p. 173.

Treatment of Pneumonia.—The efficacy of potassium penicillin G in a suspension of peanut oil with a dispersion of beeswax was investigated by Volini and his associates in the treatment of 104 patients with pneumonia who were admitted to the Cook County Hospital. The patients were given once daily an intramuscular injection of 1 cc. of a mixture containing 300,000 Oxford units of penicillin. The clinical response was good; the temperatures of over 60 per cent of the patients returned to normal within seventy-two hours. In many of the patients the levels of penicillin concentration were determined at intervals following injection, and it was found that they were more than adequate to effectively combat organisms causing pneumonia. There were no significant toxic reactions. The mortality rate was 3.8 per cent, but in all of the patients who died complications existed, so that pneumonia was not necessarily the chief cause of death. Complications and concurrent diseases existed in 32.7 per cent of the patients. The authors feel that patients who do not respond to treatment within seventy-two hours should be reinvestigated.

Streptomycin and Penicillin in Gynecologic Conditions.—Hesseltine presents in a table the therapeutic values of penicillin and streptomycin against organisms usually encountered in obstetric and gynecologic conditions. He stresses the importance of complete bacteriologic examination, not only to determine the offending organism, but also to ascertain its susceptibility to penicillin and streptomycin as a guide to therapy. Cultures should be obtained from the uterine cavity as well as the blood stream. The author and an associate made a special study on the prophylactic use of penicillin and streptomycin in patients in long labor, those treated by Dührssen's incision, intrauterine pack and other treatments commonly followed by a febrile course. They stress that streptomycin and penicillin are extremely valuable therapeutic aids in obstetrics and gynecology. Sufficient amounts must be given over an appropriate period of time. The parenteral route is the only acceptable one in obstetric and gynecologic complications. Other therapies such as blood transfusions, fluids, relief of bowel distention, drainage of abscesses and other routines must not be neglected. The author states that the antibiotics do not extend obstetric and gynecologic conditions for major surgery beyond the present accepted standards.

Journal of the American Dental Association, Chicago

38:293-416 (March) 1949. **Partial Index**

*Survey of Dental Diseases as Diagnostic Aid in Rheumatic Fever. M. Entine.—p. 303.
Value of Hot Oil as Means of Disinfecting Instruments. H .T. Knighton.—p. 309.
The Dentist in the Hospital Team: Scientific Opportunities in Hospital Dentistry. E. M. Bluestone.—p. 316.

Dental Diseases in Rheumatic Fevr.—Entine observed that many patients with rampant dental caries have had rheumatic fever. A survey was instituted to ascertain whether the relation was accidental or whether rampant dental caries and heavy mucin deposits can be classified as symptoms or sequelae of the disease. The survey included 100 children with rheumatic fever and 100 normal children. The children with rheumatic fever were studied at outpatient and rheumatic fever clinics. The ages of the children varied between 4 and 17 years; the average was 9.5 years for the normal children and 10.3 years for those with rheumatic fever. The CRE index was determined in both groups of children. C indicates the number of carious penetrations of the enamel; R, the number of restorations, and E, the number of teeth previously extracted

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because of caries, plus the number of extractions necessary. The CRE index for normal children between the ages of 4 and 17 is 8.1. The CRE index for children with rheumatic fever, of the same age and socio-economic level, is 13.2. This represents approximately 60 per cent more dental caries in rheumatic fever patients than in normal children. This seems to indicate a relation between the streptococci associated with rheumatic fever and the greatly increased amount of streptococcic activity in the teeth as evidenced by caries. There is reason to suspect that in some cases a peculiar orange-brown mucin-like deposit around the necks of the teeth and on the occlusal surfaces is a symptom of rheumatic fever. In 33 per cent of the rheumatic fever patients nonsuppurative gingivitis is present.

Journal of Clin. Endocrinology, Springfield, Ill.

9:113-210 (Feb.) 1949

Testis-Pituitary Interrelationship: Relative Inability of Testosterone to Reduce Urinary Gonadotropin in Eunuchoid Men. E. P. McCullagh and F. J. Hruby.—p. 113.
Treatment of Acromegaly. L. M. Hurxthal, H. F. Hare, G. Horrax and J. L. Poppen.—p. 126.
Mechanism of Secretion of Thyroid Hormone. C. P. Leblond and J. Gross.—p. 149.
Width of Adrenal Cortex in Lymphatic Leukemia, Lymphosarcoma and Hyperthyroidism. P. M. LeCompte.—p. 158.
Spermatogenesis Following Administration of Androgen and Gonadotropin in Case of Eunuchoidism: Coincidental Neoplasm During Therapy. R. M. Perlman.—p. 163.
Radioiodine in Study and Treatment of Thyroid Disease: Review. M. P. Kelsey, S. F. Haines and F. R. Keating Jr.—p. 171.

Journal of International College of Surgeons, Chicago

12:103-206 (March-April) 1949

Technic of Parotidectomy. H. Bailey.—p. 103.
*Sympathetic Conduction Pathways Independent of Sympathetic Trunks—Their Surgical Implications. W. F. Alexander, A. Kuntz, W. P. Henderson and E. Ehrlich.—p. 111.
Two Stage Pharyngo-Esophageal Diverticulectomy: Indications and Technic. R. W. McNealy and J. A. Glassman.—p. 120.
*Labyrinthine Surgery for Ménière's Disease. J. R. Lindsay.—p. 127.
Total Gastrectomy in Carcinoma of Stomach. E. J. Halligan, L. L. Perkel and J. K. Catlaw.—p. 134.
The Preoperative and Postoperative Care of Carcinoma of Rectum and Pelvic Colon. J. P. Fleming.—p. 142.
Cystic Omental Bursa: Pseudopancreatic Cyst. S. A. Zieman.—p. 150.
Surgical Correction of Senescent Pendulous Cheeks. A. M. Brown. —p. 154.
Pentothal Sodium Anesthesia in Major Surgery: Application, Administration, Dosage. D. L. Rater.—p. 161.
Urinary Bladder Obstructions in Children. J. F. McCahey.—p. 170.
New Operation for Prolapsed Uterus and Modification of Montgomery's and Simpson's Operation for Retroversion. L. L. Lapi.—p. 177.
Intramedullary Nailing of Skeleton. A. González Garcia.—p. 185.

Sympathetic Conduction Pathways.—Dissections of the sympathetic trunks and the communicating rami, carried out by Alexander and co-workers on human cadavers, and microscopic examination of sections of communicating rami and of spinal nerves revealed that aggregates of sympathetic ganglion cells lie imbedded in ventral spinal nerve roots and adjacent to nerve roots at the sites of origin of white communicating rami. These ganglion cells are synaptically connected with preganglionic fibers which reach them directly via the ventral nerve root. Most of them in turn send their axons distalward in the nerve trunk. In this manner sympathetic conduction pathways are formed which do not traverse the sympathetic trunk. They are not interrupted by sympathetic trunk extirpation or by section of the white communicating rami. Ganglions in the ventral nerve root or located adjacent to the root have been observed mainly in the first and the second thoracic and the first and the second lumbar segments. Because of connecting rami between the upper thoracic nerves and between the eleventh thoracic to the third lumbar nerves, the distribution of the sympathetic conduction pathways which are independent of the sympathetic trunk is not limited to the segments in which the ganglion cells concerned are located. These observations afford a more satisfactory explanation than formerly has been possible for failures to achieve complete sympathetic denervation by sympathectomy. Resection of the ventral roots of the second and the third thoracic nerves, in conjunction with resection of the white communicating ramus of the first thoracic nerve and interruption of the sympathetic trunk below its connections with the third thoracic nerve, probably would insure complete sympathetic denervation of the upper extremity in some cases. Resection of the ventral roots of the first and the second lumbar nerves, in conjunction with extirpation of the sympathetic trunk from the eleventh thoracic to the third lumbar segments, probably would insure complete sympathetic denervation of the lower extremity. In order to achieve permanent sympathetic denervation measures to prevent regeneration of the interrupted ventral root fibers would be necessary.

Labyrinthine Surgery for Ménière's Disease.—Lindsay, in a search for a method to prevent vertigo while preserving cochlear function, carried out several procedures on the labyrinth of 4 patients, 3 men and 1 woman between the ages of 32 and 55, with intractable Ménière's disease. Results showed that decompression of perilymph is of no value as a relief to Ménière's disease, or hydrops of the labyrinth. A fistula made in a bony semicircular canal through a simple mastoidectomy approach and left uncovered will probably remain a permanently open fenestra, which is undesirable because of the associated fistula symptom and Tullio phenomenon. Also a fenestra covered only by mucosa might offer less resistance to infection in case of subsequent middle ear suppuration. Closure of fistula can be assured at operation by making a very small opening and leaving bone chips in it, and probably by destruction or removal of the membranous labyrinth. The depression of the hearing threshold to a state of profound deafness in all four ears operated on, including that in which only a simple fenestra was created, suggests that the existence of a third window in the labyrinth in the presence of an intact conducting mechanism results in a definite threshold loss. Whether such a hearing loss in the first 3 patients would have been avoided by causing the fistulas to close, thereby limiting the procedure to the intralabyrinthine injury, has not yet been determined. The vertigo was relieved in all 4 patients.

Journal of Investigative Dermatology, Baltimore

12:81-144 (Feb.) 1949. **Partial Index**

Fixed Eruption Due to Bromides. J. A. Tolmach and S. B. Frank. —p. 81.
"L. E." Cell in Blood in Acute Disseminated Lupus Erythematosus. R. Dorothy Sundberg and Norma B. Lick.—p. 83.
*Streptomycin Therapy of Chronic Granuloma Inguinale. M. H. Samitz, P. N. Horvath, P. P. Mori and H. Beerman.—p. 85.
Rough-Smooth Variation in Blastomyces Dermatitidis Gilchrist and Stokes 1898. E. D. DeLamater.—p. 101.
Serum Concentrations Following Five Treatment Schedules with Procaine Penicillin in Oil with Aluminum Monostearate. D. K. Kitchen, E. W. Thomas and C. R. Rein.—p. 111.
Preliminary Evaluations of Some New Synthetic Organic Compounds as Scabicides. G. W. Eddy.—p. 117.
Observations on Fluorescent Material in Hairs Infected by Microsporon in Tinea Capitis. Z. Felsher.—p. 139.

Streptomycin in Chronic Granuloma Inguinale.—Nineteen cases of granuloma inguinale were treated by Samitz and his co-workers with a uniform total dosage of 20 Gm. of streptomycin administered in fractions of 0.5 Gm. every three hours for five days. All patients responded with rapid healing, and there were no recurrences during an observation period of six to fifteen months. There was one recurrence within three months among 4 patients treated with a total of 10 Gm. of streptomycin. There were no significant toxic reactions to the streptomycin treatment.

Medical Annals of District of Columbia, Washington

18:1-58 (Jan.) 1949

Trends in Medical Education. W. S. McCann.—p. 1.
Newer Concepts of Infant Feeding. W. F. Burdick.—p. 6.
Newer Developments in Allergic Eczematous Dermatitis. R. L. Baer. —p. 13.
Joseph Goldberger and the Mysterious Hunger. E. Podolsky.—p. 17.

18:59-112 (Feb.) 1949

What is Good Medical Service? I. Galdston.—p. 59.
Progress in Virus Controls. C. Armstrong.—p. 64.
Consideration of Some Aspects of Allergy Affecting Respiratory Tract. H. S. Bernton.—p. 68.
Immediate Treatment of Common Fractures. C. L. Hall.—p. 73.
Medical Misconceptions. J. A. Gannon.—p. 78.

Plastic and Reconstructive Surgery, Baltimore

4:1-122 (Jan.) 1949

Method of Cutting and Suturing Lip in Treatment of Complete Unilateral Clefts. A. B. LeMesurier.—p. 1.
Mammaplasty for Pendulous Breasts: Empiric and Geometric Planning. G. Aufricht.—p. 13.
Internal Wire-Pin Immobilization of Jaw Fractures. J. B. Brown, M. P. Fryer and F. McDowell.—p. 30.
Immediate Reconstruction of Lower Jaw Following Surgical Excision of Large Tumors. H. Marino, N. B. Turco and M. Craviotto.—p. 36.
*Transfer of Metacarpal, With or Without Its Digit, for Improving Function of Crippled Hand. G. L. Hyroop.—p. 45.
Surgical Repair of Nasal Deformities. F. Young.—p. 59.
Plastic Surgery Problems in Texas City Disaster. J. H. Hendrix, T. G. Blocker and Virginia Blocker.—p. 92.
Columella and Nasal Tip Reconstruction Using Multiple Composite Free Grafts: Report of 2 Cases. D. D. Pelliciari.—p. 98.
One-Stage Ear Lobe Reconstruction. S. K. Wynn.—p. 105.
Klippel-Feil Syndrome: Review of Literature and Report of Case. M. Gonzalez Ulloa and T. F. Gonda.—p. 109.

Transfer of Metacarpal to Improve Function of Crippled Hand.—Metacarpal transfer as described by Hyroop implies the transfer of a metacarpal with or without the attached digit, its tendons, nerves and vascular supply. In loss of the thumb with loss of the distal two thirds of the first metacarpal, with a good carpometacarpal joint, transfer of the index finger with the second metacarpal, with skin, blood vessels, nerves and tendons, will give an ideal result if all the muscles and tendons are present in the stump of the amputated thumb. Where the thumb with all of the first metacarpal is lost, the second metacarpal with the index finger may be transferred to the greater multangular carpus. Where there is amputation of the thumb with the first metacarpal and the index finger at the proximal joint, the second metacarpal may be transferred, with the palmar tissue, nerves and blood vessels, for a thumb. Where the thumb and index finger with their metacarpals are lost, the third metacarpal, with the long finger, may be transferred to make a thumb. Loss of the thumb and index finger with their metacarpals and amputation of the long finger at the proximal joint may indicate transfer of the third metacarpal, with palmar tissue, nerves and blood vessels. Where there is loss of the long finger with the head or all of the third metacarpal, transfer of the second metacarpal with the index finger, with or without bone graft, gives a good compact hand with normal function. Where there is amputation of the ring finger with the head or all of the fourth metacarpal, transfer of the little finger, with the fifth metacarpal, to the base of the fourth gives the same results as in the case of amputation of the long finger. The author stresses that these and other metacarpal transfer operations give the patient a hand that is ready for use in a short time. It has the advantage of carrying with it its own nerve and vascular supply. The special sensations of the hand, along with stereognosis, are retained.

Proc. of Staff Meet. of Mayo Clinic, Rochester, Minn.

24:133-148 (March 16) 1949

Effect of Combined Treatment with Aureomycin and Dihydrostreptomycin on Brucella Infections in Mice. F. R. Heilman.—p. 133.
*Combined Use of Aureomycin and Dihydrostreptomycin in Treatment of Brucellosis. W. E. Herrell and T. E. Barber.—p. 138.
Chronic Glomerulonephritis Complicating Pregnancy. M. Elizabeth Mussey.—p. 145.

Aureomycin and Dihydrostreptomycin in Brucellosis.—Herrell and Barber describe a new approach to the treatment of brucellosis in human beings, namely, the combined use of aureomycin and dihydrostreptomycin. It is not suggested that this is a specific form of treatment for brucellosis, but to date it appears to be the most effective method and, at the same time, the method which probably causes the least inconvenience to the patient and with which the lowest incidence of toxicity is associated when compared with previously available methods. The recommended plan of treatment consists of the administration of approximately 3 Gm. of aureomycin per day by the oral route combined with the simultaneous administration of 2 Gm. of dihydrostreptomycin per day by the intramuscular route. For acute brucellosis the average course of treatment should be twelve to fourteen days. In the treatment of culturally proved brucellosis with localizing lesions (brucellosis with complications) the course probably should be extended to twenty-one to twenty-eight days.

Surgery, St. Louis

25:169-328 (Feb.) 1949

Determining Factors in Safety and Success of Present Day Radical Surgery. A. O. Whipple.—p. 169.
*Angiocardiography in Differential Diagnosis of Pulmonary Neoplasms. H. Neuhof, M. L. Sussman and R. A. Nabatoff.—p. 178.
Experimental Production of Gradual Occlusion of Large Arteries with Polythene and Tantalum. F. W. Cooper Jr., R. L. Robertson, P. C. Shea Jr. and E. W. Dennis.—p. 184.
Vasomotor Changes in Peripheral Nerve Injuries. C. A. R. Schulenburg.—p. 191.
*Importance of Exploratory Thoracotomy in Diagnosis of Certain Pulmonary Lesions. C. R. Johnson, O. T. Clagett and C. A. Good.—p. 218.
Epiphrenic Esophageal Diverticulum Associated with Cardiospasm: Report of Successful Diverticulogastric Anastomosis. J. K. Poppe and R. Berg.—p. 231.
Cholecystitis Emphysematosa. E. E. Jemerin.—p. 237.
Volvulus of Cecum: Appeal for Primary Resection, with Report of 6 Cases. E. Melchior.—p. 251.
Prevention of Abdominal Adhesions: Experimental Study on Role of Gastrointestinal Motility. C. A. Schiff, S. L. Goldberg and H. Necheles.—p. 257.
Some Psychosomatic Aspects of Management of Surgical Patients. M. Lipkin and E. Joseph.—p. 268.
Plastic Surgery in Mammoth Breasts. E. S. Lamont.—p. 276.
Effect of Ultraviolet Radiation and Air Conditioning on Air Sterility in Closed Surgery. J. M. Goodman, Mary B. Cass, K. P. Klassen and G. M. Curtis.—p. 284.
Comparison of Solid and Liquid Soap as Vehicle for G-11 (Hexachlorophene) in Surgical Wash. C. V. Seastone and T. C. Erickson.—p. 290.

Angiocardiography in Differential Diagnosis of Pulmonary Neoplasms.—Neuhof and collaborators point out that Robb and Steinberg in 1938 presented observations concerning the role of angiocardiography in the interpretation of a variety of intrathoracic lesions. They noted changes in the branches of the pulmonary artery in tuberculosis and bronchiectasis, obstruction of the innominate vein by substernal goiter, and displacement of the great venous channels by mediastinal tumors or widespread fibrosing pulmonary lesions. Neuhof and associates used the Robb and Steinberg procedure with the addition of a multiple roentgen exposure technic. They aimed to ascertain the effects of various pulmonary neoplasms on the pattern of the pulmonary artery and its branches. The interpretation of the alteration has been materially aided by comparison with the films of operative specimens in which the pulmonary artery was injected with a radiopaque material. It was found that malignant lesions of the main bronchus often involve major branches of the pulmonary artery, causing compression, irregular distortion and varying degrees of obstruction. In those cases in which the infiltrating lesion arises from a small bronchus, similar changes involving smaller branches of the pulmonary artery are seen. In well circumscribed tumors, the adjacent vessels are spread apart and encircle the lesion. Mediastinal and pleural lesions cause no significant changes in the angiograms.

Exploratory Thoracotomy in Diagnosis of Pulmonary Lesions.—Johnson and his associates recently reviewed the records of 384 patients operated on by Clagett at the Mayo Clinic during the period 1942 to 1947 for lesions involving the lungs primarily. On the basis of the clinical records, laboratory findings and other diagnostic aids short of exploratory thoracotomy, a diagnosis could be made in 270 of these patients. In the remaining 114, it was necessary to resort to exploratory thoracotomy before a definite diagnosis could be established. On the basis of bronchoscopic and roentgenographic findings, these 114 cases were divided into three groups. The first group included all cases in which there was a mass lesion in the lung peripheral to the field of bronchoscopic visualization. In the second group were placed those cases in which the lesion was represented primarily by changes secondary to bronchial obstruction. Patients with lesions which could not be placed in either the first or second group were placed in a third or miscellaneous group. Thirty-nine of fifty-three mass lesions were proved to be malignant. Indications for removal existed in the majority of the benign lesions. The authors feel that the presence of a mass lesion of an indeterminate nature is an indication for exploratory thoracotomy. A malignant growth was detected at operation in 24 of the 48 cases in which the bronchoscopic and roentgenographic evidence was only that of bronchial obstruction. It had been impossible to make a positive diagnosis preoperatively. The 10 patients of the miscel-

laneous group were submitted to thoracotomy because the lesion failed to subside after a period of observation. Three of the 114 indeterminate pulmonary lesions remained indeterminate after exploratory thoracotomy. There were no deaths among the 25 patients who underwent exploration only. Six deaths followed pneumonectomy and 2 followed lobectomy. Exploratory thoracotomy is a valuable diagnostic measure.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

57:45-98 (Feb.) 1949

Training for Surgical Career. A. H. Peacock.—p. 45.
*Respiratory Emergencies in the Newborn. W. F. Goff.—p. 49.
Cancer of Rectum and Colon. H. E. Bacon and H. D. Trimpi.—p. 58.
Response of Germ Cells to Gonadotropic Hormones in X-Ray Injured Ovaries of Young White Mice. J. M. Essenberg.—p. 61.
Comparative Therapeutic Effects of Dextro and Racemic Amphetamine Sulfate. S. C. Freed.—p. 67.
*Use of Peritoneal Drainage in Abdominal Operations. E. M. Baker. —p. 71.
Unusually Large Amounts of Pitocin for Induction of Labor. R. R. Gratton.—p. 84.
Polyethylene Tubing for Continuous Spinal Anesthesia. A. C. Kirchhof and D. C. Boals.—p. 88.
Preservation of Internal as Well as External Anal Sphincter Following Resection of Rectum for Carcinoma: Case Report. R. R. DeNicola. —p. 91.

Respiratory Emergencies in the Newborn.—Goff advises a direct laryngoscopy for every newborn infant who fails to start respiration promptly or who shows signs of respiratory distress. Three posteroanterior roentgenograms of the chest should be taken in the cyanotic newborn infant. These will aid in the differential diagnosis of pulmonary, cardiac and cerebral pathologic conditions. Goff mentions congenital laryngeal stridor, abductor paralysis and membranous paralysis as laryngeal emergencies in the newborn. Congenital laryngeal stridor is a symptom rather than a disease, which is frequently due to a flabby larynx in which the false cords and arytenoids fall into the glottis on inspiration. In most cases the child will outgrow the weakness in a year. A congenital web between the cords requires incision with subsequent dilatation. Laryngomalacia, an anomaly in which both sides of the epiglottis curl in, needs only observation. A baby with complete stenosis of the larynx may pass as stillborn but would respond to immediate intubation or tracheotomy. The author discusses acute respiratory distress due to structural or pathologic changes in the lungs, such as atelectasis, pneumothorax, tracheoesophageal fistula, diaphragmatic hernia, thymus enlargement and lung cyst. Atelectasis is by far the commonest of the chest emergencies of the newborn. In the Swedish Hospital 157 cases of congenital atelectasis were observed among a total of 13,515 live births. Of the 95 premature infants with atelectasis 90 died, and of the 62 full term infants 30 died. The author makes a distinction between atelectasis due to an unexpanded, unaerated lung, and that due to bronchial obstruction from retained or aspirated secretions. In the latter case, tracheal or bronchoscopic aspiration is of value. In the unexpanded lung, special emphasis should be given to the early, gentle toilet of the respiratory passages, followed by the administration of oxygen and the maintenance of external heat. The pulmotor positive-negative resuscitator machines have killed more newborn infants than all other types of treatment combined. The author feels that most hospitals are not adequately equipped to resuscitate newborn infants. He has assembled an emergency outfit especially for use in the delivery room.

Peritoneal Drainage in Abdominal Operations.—Baker shows that diametrically opposed views have been expressed with regard to drainage, some advising "when in doubt drain" and others "when in doubt do not drain." He undertook a survey of certain groups of cases in an attempt to learn more concerning the advantages and the dangers of intraperitoneal drainage. He stresses the following points: 1. Except for the control of bleeding, there seems to be little value in the incorporation of gauze in abdominal drains. 2. Adhesions by fibrin completely isolate a drained point from the remaining cavity in a limited number of hours. 3. The practice of draining low points of the abdomen for injured areas higher up is unsound. 4. There are no means of measuring a person's susceptibility to bacterial organisms. 5. There are three indications for the use of drains in the abdominal cavity: first, to control bleeding; second, to provide an outlet for a localized infection and thus to prevent abscesses; and third, to produce a sinus tract through which substances may escape from a walled-off area within the abdomen without soiling the general peritoneal surfaces. 6. No fixed rule can be made to govern the use of peritoneal drainage; the problem is an individual one. 7. It is safest to follow the old dictum of Lawson Tait—"when in doubt drain." 8. Abdominal drainage involves an accurate knowledge of the physiology of the peritoneum. 9. The surgeon can obtain good results only as long as his operative maneuvers are in accord with the natural physiologic course of peritoneal response to disease.

Yale Journal of Biology and Medicine, New Haven

21:181-262 (Jan.) 1949

*Probable Mechanism of Streptomycin Action in Tuberculosis. H. J. Corper and M. L. Cohn.—p. 181.
Study of Absorption of Fat and Carotene from Gastro-Intestinal Tract. D. W. Molander.—p. 201.
*Immunization of Troops with Typhus Vaccine and Characteristics of Typhus in Immunized Individuals. J. F. Sadusk Jr.—p. 211.
Relationship Between pH Tolerance, Virulence, and Proteolytic Enzymes in Bacteria: I. Bacillus Anthracis. J. M. Leise.—p. 233.
Failure of Estrogen to Induce Changes in Sex Skin of Male Chimpanzee. G. Clark.—p. 245.
Millivoltmeters. H. S. Burr and A. Mauro.—p. 249.
Influence of Hormones from Adrenal Cortex on Dermal Spread of India Ink With and Without Hyaluronidase: Preliminary Report. Jeanette C. Opsahl.—p. 255.

Streptomycin in Tuberculosis.—A series of controlled in vitro and in vivo tests with tubercle bacilli in various mediums as well as controlled tests performed by Corper and Cohn in guinea pigs showed that streptomycin in vitro in amounts up to 1,000 units per cubic centimeter possesses no tuberculocidal action within one month of contact at 37 C. Streptomycin is not adsorbed or absorbed in active form by mammalian tubercle bacilli or by egg white or egg yolk in which it is not destroyed by heat coagulation of these materials. Streptomycin in vitro appears to act only during its presence in nutrient mediums, which does not explain the sustained retardant action in vivo on tuberculosis. Streptomycin exerts no appreciable discernible effect on the viability of virulent human tubercle bacilli in vivo, but it retards skin tuberculosis produced by the intracutaneous injection of virulent human tubercle bacilli as well as that produced by avirulent human tubercle bacilli. Treatment with streptomycin exerts a definite effect on the splenomegaly produced in guinea pigs by virulent or avirulent human tubercle bacilli. The drug did not appear to be able to prevent the natural development of specific tuberculoimmunity, specific tuberculoallergy or bacillary allergic intoxication. The action of the drug does not appear to be interfered with by loading the reticuloendothelial system with india ink or avirulent tubercle bacilli. In retarding tuberculosis, streptomycin does not appear to prevent a lethal effect from the intravenous infection with virulent human tubercle bacilli, in spite of the absence of macroscopically discernible tuberculosis in sufficient amount to account for death; resistance of the tubercle bacilli to the drug may play a part in this phenomenon. There is a likelihood that streptomycin does not act on tubercle bacilli per se in vivo as retardant to their growth as it does in vitro by direct contact, but that some intermediate mechanism accounts for its action on tuberculosis and consequently on tubercle formation.

Typhus Vaccine Immunization.—According to Sadusk, 64 cases of epidemic, louse-borne typhus were reported from the entire United States Army for the period 1942 to 1946; 603 cases of murine (endemic) typhus and 6,685 cases of scrub typhus (tsutsugamushi disease) were reported for the same period. There were no deaths among the 64 patients with epidemic typhus, who had been immunized with the epidemic typhus vaccine used by the United States Army. The vaccine consisted of a 10 per cent yolk sac suspension of the Breinl strain of Rickettsia prowazeki extracted with ether, containing both rickettsial bodies and "soluble antigen." Since early 1942 and throughout the war years three injections of typhus vaccine, 1.0 cc. each, were administered subcutaneously at an interval of 7 to 10 days, with stimulating doses every six months in endemic areas. Since 1944 the initial immunization series was reduced from three to two doses of vaccine. While no definite conclusions may be reached concerning reduction

in incidence of epidemic typhus with this vaccine, the following points may be made: (1) evidence is accumulating to suggest that such incidence may be definitely lowered by adequate prophylactic immunization; (2) vaccination serves greatly to modify the clinical course of the disease if it occurs in adequately vaccinated persons; fever is much lower and of shorter duration than in persons not vaccinated, the period of hospitalization is markedly reduced, the extent and duration of rash are diminished, circulatory and nervous symptoms are lessened and the incidence of complications is brought down to a low figure; (3) the chance of death from epidemic typhus is practically nil if a person has been adequately immunized at least two weeks prior to exposure. The serologic findings in 5 of the 64 patients with epidemic typhus occurring subsequent to prophylactic immunization revealed that complement-fixing antibodies for epidemic typhus persisted for prolonged periods, while the Weil-Felix reaction and the reaction to the specific rickettsial agglutination test became negative in late convalescence. In all 5 cases it was highly probable that infection was sustained by pulmonary inhalation or conjunctival absorption of dust containing infected louse feces.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

Annals of Rheumatic Diseases, London

8:1-88 (March) 1949

Variant of Rheumatoid Arthritis Characterized by Recurrent Digital Pad Nodules and Palmar Fasciitis, Closely Resembling Palindromic Rheumatism. E. G. L. Bywaters.—p. 1.
*Metabolism of Hyaluronic Acid in Relation to Rheumatic Diseases. H. Cohen.—p. 31.
Synovial Fluid Mucin. C. Rimington.—p. 34.
Histopathology of Intrinsic Muscles of Hand in Rheumatoid Arthritis: Clinico-Pathologic Study. O. C. Kestler.—p. 42.
Clinical Significance and Treatment of Lesions of Intervertebral Disk. N. Capener.—p. 59.
Treatment of So-Called Palindromic Rheumatism with Gold Compounds. E. W. Boland and N. E. Headley.—p. 64.
Rheumatoid Arthritis and Psoriasis: Statistical Statements. K. Wassmann.—p. 70.
Rheumatological Hand and Finger Symptoms. E. Jonsson.—p. 72.

Hyaluronic Acid and Rheumatic Disease.—Cohen discusses the role of hyaluronic acid and the enzyme hyaluronidase in the causation of the phenomena of rheumatic diseases. It was believed previously that there is no common specific cause for the rheumatic disorders but that they have two common features, namely, the site of attack and the structural changes they exhibit. The site of the rheumatic lesion is in the skeletal tissues of mesenchymal origin, viz., connective tissue, fascia, muscle, ligament, joint capsule, synovial membrane, articular cartilage and even bone. Connective tissue consists essentially of collagen fibrils and of the interfibrillar ground substance or cement. Chemical studies have shown that among the constituents of this ground substance are chondroitin sulfuric acid and hyaluronic acid and that both of these can be acted on by the enzyme hyaluronidase. It appears that when the enzyme hyaluronidase attacks hyaluronic acid and other ground substances of connective tissue there occurs a series of changes analogous to those seen in rheumatic diseases. It has not been definitely established that a direct association exists between hyaluronic acid metabolism and rheumatism. The evidence is, however, suggestive, and a fruitful field of study has been revealed which merits further exploration.

Brain, London

71:343-482 (Dec.) 1948

Olivo-ponto-cerebellar Atrophy. M. Critchley and J. G. Greenfield.—p. 343.
Subacute Inclusion Encephalitis (Dawson Type). W. R. Brain, J. G. Greenfield and Dorothy S. Russell.—p. 365.
Thrombosis of Intracranial Veins. D. Kendall.—p. 386.
Effect of Intracisternal Injection of Saline Solutions on Pressure of Cerebrospinal Fluid of Dog. T. H. B. Bedford.—p. 403.
Copper and Iron Content of Brain and Liver in Normal and in Hepatolenticular Degeneration. J. N. Cumings.—p. 410.
Possible Relationship Between Hereditary Ataxia and Peroneal Muscular Atrophy; with Critical Review of Problems of "Intermediate Forms" in Degenerative Disorders of Central Nervous System. M. Roth.—p. 416.
Lipidoses and Central Nervous System. A. Bird.—p. 434.
Sarcoidosis with Involvement of Nervous System. J. Colover.—p. 451.

British Journal of Plastic Surgery, Edinburgh

1:217-292 (Jan.) 1949

Prefabricated Autogenous Ear Cartilages. H. E. Blake.—p. 220.
Treatment of Burns: Return to Basic Principles. A. B. Wallace.—p. 232.
Osteoporosis Following Burns. N. Owens.—p. 245.
Complications and Sequelae of Untreated Fractures of Facial Bones and Their Treatment. F. T. Moore and T. G. Ward.—p. 257.
Pressure Sores in Paraplegic Patients. R. Battle.—p. 268.
Operative Treatment of Abdominal Obesity, Especially Pendulous Abdomen. J. Foged.—p. 274.
*Some Observations on Curling's Ulcer. F. Braithwaite and P. H. Beales.—p. 284.

Curling's Ulcer.—According to Braithwaite and Beales ulceration of the duodenum following burns was first described by Curling in 1842. Harkins, in an extensive review of this condition in 1938, suggested that its incidence in severe burns was about 3.8 per cent, but the authors state that the incidence now is much lower. They ascribe this to modern methods of eliminating or reducing to a minimum bacterial infection of the burned areas. As early as 1894 it had been suggested that acute duodenal ulceration is associated with septic conditions as frequently as it is with burns and that the mechanism of production is the same in both cases. The authors report the histories of 2 patients with Curling's ulcer. They stress that Curling's ulcer is one of the late complications of burns. The lesion is found most commonly at the stage when the sloughs in third degree burns are separating; this is when tissue autolysis, exudation and infection are likely to be severest. The first of the patients cited had an extensive burn, covering approximately 65 per cent of his body. The ulcer was clinically evident eleven days after the injury. His treatment was adequate, but the extent of the burn was massive and infection with its resulting toxemia was inevitable. Forty per cent of his burn was third degree, with inevitable sloughs. The second patient shows that minimal sepsis may reactivate a dormant ulcer. In eight years, during which approximately 1,500 burns had been treated, only 3 examples of Curling's ulcer had been seen. This gives an incidence of 0.2 per cent. Some investigators have expressed the opinion that sepsis is the main feature in the production of Curling's ulcer. Penicillin is the most prominent recent factor in the control of sepsis. The introduction of penicillin has done much to diminish the incidence of Curling's ulcer. With modern treatment of burns aimed at prevention and control of infection and early skin grafting, this lesion will be encountered rarely, and then only in very extensive burns when the ideals of treatment are impossible to fulfil.

Thorax, London

4:1-72 (March) 1949

Subphrenic Abscess. H. R. S. Harley.—p. 1.
Pneumoconiosis Due to Graphite Dust. S. R. Gloyne, G. Marshall and C. Hoyle.—p. 31.
Cardiac Myxoma. S. J. R. Macoun.—p. 39.
Pulmonary Complications of Dysphagia. J. R. Belcher.—p. 44.
*Ciliary Action. V. E. Negus.—p. 57.
Observations on Co-ordination of Diaphragmatic and Rib Movement in Respiration. H. Herxheimer.—p. 65.

Ciliary Action.—Negus stresses that persons dealing with respiratory diseases should never lose sight of the dependence on cilia in the physiologic processes of the nose and sinuses. He discusses the mode of action and the various functions of the cilia and emphasizes that to preserve ciliary action, and to assist its highly important function of resisting infection, it is necessary to take such measures in the prevention and treatment of disease as appear of assistance to physiologic processes. Thus the blanket of mucus must not be washed away by nasal douches, nor must it be made too viscid by concentrated glycerin or too liquid by excessive use of potassium iodide. The secretions must not be dried by hypertonic solutions, by excessive use of amphetamine or atropine or by residence in an inefficiently conditioned building. Secretions must not be allowed to accumulate in a sinus or bronchus. Except for brief periods no drugs must be employed which have a toxic effect on the mucosa; cocaine, thymol and most powerful antiseptics are in this category. Obstruction to ciliary streams must be cleared, whether a plug of coagulated mucopus in the ostium of the maxillary sinus, a foreign body or a mass of new growth in a bronchus. If an operation is performed in an area covered

by ciliated epithelium, every care must be taken to avoid permanent damage. Adenoids must be removed in such a way as to avoid formation of scar tissue and to allow regeneration; in a sinus the opening must not be overly wide, nor should the mucosa be removed if capable of recovering. The reaction of the secretions must be regulated to facilitate free action; a p_H just above neutral appears best, and for this reason spray solutions are made slightly alkaline. The alkali reserve of the body may require correction on occasion. If ciliary action maintains its efficiency, then there will be no penetration of the mucosa by bacteria.

Acta Chirurgica Scandinavica, Stockholm

97:283-380 (Jan. 26) 1949. **Partial Index**

*Barge-Bourgain's Reaction in Genitourinary Tuberculosis. O. Sievers and Th. Berglin.—p. 283.
*Potassium Metabolism in Connection with Operations. N. Blixenkrone-Møller.—p. 300.
Retropubic Prevesical Prostatectomy. W. Mathisen.—p. 313.
Operative Treatment of Female "Stress" Incontinence. H. Wahren. —p. 331.
Perirenal Abscess. Ola Obrant.—p. 338.

Barge-Bourgain's Reaction in Genitourinary Tuberculosis.—Sievers injected centrifuged Besredka, Sauton and Dubos substrates after the growth of a pathogenic strain of Mycobacterium tuberculosis of human type into guinea pigs with tuberculous inguinal lymph nodes. He thus produced in the animals a positive reaction similar to the "allergic reaction" to human serum produced by Barge and Bourgain in tuberculous guinea pigs. Control animals were unaffected. The longer the bacteria had been allowed to grow in the substrates, the stronger was the reaction. In the injected substrates on which cultures of M. tuberculosis have been grown, there must exist products that arise in association with the growth of the bacteria. No evidence was produced to show that the substances in the injected substrates were identical with the substances which appeared in some of the human serum with which Barge and Bourgain produced a positive reaction in tuberculous guinea pigs, but the reactions in both cases exhibited similar pictures suggesting that the Barge-Bourgain reaction may be a specific one. Berglin's clinical trial of the Barge-Bourgain reaction showed that diagnosis of tuberculosis was doubtful in only 1 of 41 patients with a primarily positive Barge-Bourgain reaction. Twenty-two of the 41 patients had urogenital tuberculosis, and 9 had tuberculous epididymitis. The Barge-Bourgain reaction was negative in 17 control patients with nontuberculous disease of the urinary tract; it was negative likewise in 23 control patients with nonurogenital diseases. Barge-Bourgain's reaction may therefore be considered specific from a diagnostic point of view in diseases of suspected tuberculous nature, particularly in the urogenital organs, in epididymitis and in obscure hematuria. The relatively short time required for the reading of the reaction facilitates an early diagnosis of urogenital tuberculosis. The parallelism apparently existing between the reaction and the activity of the tuberculous process seems to be of certain value in determining the suitable time for surgical treatment, which should not be instituted when the reaction is still positive.

Potassium Metabolism After Surgical Intervention.—Blixenkrone-Møller determined the potassium excretion in the urine of 24 patients in good general condition, who had been on an ordinary diet, had not been dehydrated and had not had any disturbances of metabolism. The potassium excretion was on an average 1,700 mg. per twenty-four hours, varying from approximately 400 to 2,400 mg. The excretion was lowest at night, generally somewhat greater in the forenoon than in the afternoon. Determination of the potassium excretion in 8 patients who had undergone operations (4 gynecologic operations, 2 cholecystectomies, 1 tendon suture and 1 extirpation of a parotid tumor) without parenteral administration of fluid revealed that the potassium excretion was greatly increased during the twenty-four hours following operation, especially during the afternoon. This increase is due to cellular dehydration due to the negative water balance. The potassium excretion during the twenty-four hours following operation was only half as large in 5 patients who had undergone operation on the stomach, colon or biliary tract, to whom adequate amounts of fluid were administered parenterally; in none of these patients did the potassium excretion exceed that which might be assumed to originate from tissue breakdown. Routine administration of potassium after surgical treatment is not required if adequate amounts of fluid are given. In dehydrated patients addition of potassium to the intravenous fluid is indicated. One case of abdominoperineal amputation of the rectum is reported in which 9,806 mg. of potassium was excreted during the first four postoperative days. Ten grams of potassium in dextrose, water and sodium chloride had to be administered within the next six days, until postassium balance was attained.

Acta Medica Scandinavica, Stockholm

132:201-302 (Dec. 31) 1948. **Partial Index**

Comparison of Oral and Intravenous Dextrose Tolerance Tests in Healthy Subjects. L. Goldberg and R. Luft.—p. 201.
Serum Bilirubin During Course of Icterus. H. Deenstra.—p. 223.
Determination of Diameter of Red Blood Corpuscles. L. Goldberg, Febe Gunvall, Greta Hammarsten and G. Lindgren.—p. 238.
*Necrotizing Generalized Arteritis Due to Use of Sulfonamide Drugs. T. G. van Rijssel and L. Meyler.—p. 251.

Arteritis Due to Sulfonamide Drugs.—Van Rijssel and Meyler report 7 patients with a generalized necrotizing arteritis. In 6 with a fatal outcome, necropsy revealed necrotizing inflammation of the blood vessels, especially of the arteries. The walls of these vessels contained infiltrating cells, mononuclear and polynuclear cells, fibrinoid swelling and partial necrosis. The elastic fibers had vanished. The lumen of some of the vessels contained many polymorphonuclear leukocytes; a few vessels showed thrombosis. The tissue around the vessels was infiltrated with polymorphonuclear cells. One patient had lesions only in the kidneys, but the other 5 showed similar changes in the arteries of many organs, and some also showed signs of slight interstitial myocarditis. The authors feel that the allergic state was probably not brought on by the various infections. The symptoms appeared to be related to the administration of sulfonamide compounds, and the lesions were similar to those described in the American literature as allergic inflammation of the vessels due to sulfonamide drugs. The authors suggest that the noxious action of the sulfonamide compounds may be explained in two ways: 1. Sulfonamide compounds, after conjugation with protein, act as antigen which leads to allergic reactions. 2. Sulfonamide drugs cause disintegration of microorganisms, in this way liberating substances which act as antigens. The authors stress the need of caution in the administration of sulfonamide drugs. They should be given only in cases in which bacteriologic examination indicates that penicillin will be useless and only the sulfonamide drugs will counteract the causal organism. The sulfonamide drugs should never be given for fever only; if they are absolutely necessary they should be given in large doses for a short time. Their use over a long period in small doses is inadvisable, because it may sensitize the organism. The volume of the urine should be measured every day and should not be less than 1,500 cc. Allergic symptoms should be looked for: skin eruptions, conjunctivitis, eosinophilia, polyneuritis, changes in the urine, polyarthritis, asthma, restlessness; if they are present use of the drug should be discontinued immediately.

Archivos del Instituto de Cardiología, México, D. F.

18:625-752 (Oct. 30) 1948. **Partial Index**

*Surgical Treatment of Hypertensive Cardiopathy and of Cardiac Insufficiency from Hypertension. I. Chávez and L. Méndez.—p. 680.

Surgical Treatment of Hypertensive Cardiopathy.—Chávez and Méndez performed a lumbodorsal sympathectomy on 11 patients with hypertensive cardiopathy complicated by grave cardiac insufficiency. One of the patients died from cerebral hemorrhage eleven days after the operation. Another patient had undiagnosed meningitis of long duration. He died on the day after the operation from occlusion of the aqueduct of Sylvius. A third patient died from uremia ten months after the operation. Eight patients experienced great improvement. The good results have persisted for periods which vary between one year and a half and three years after the operation. All the patients were reported to be in satisfactory condition with no recurrence of cardiac insufficiency. Some of the patients

had returned to work. The authors believe that hypertensive cardiopathy is an indication for sympathetic resection, which constitutes the only treatment capable of stopping the progress of the myocardial damage. Cardiac insufficiency, even in cases in which the disease does not respond to digitalis, can be controlled by operation, provided that the coronary, myocardial and other visceral lesions are not severe and cardiac insufficiency is not of long duration.

Deutsche medizinische Wochenschrift, Stuttgart

74:193-224 (Feb. 18) 1949. **Partial Index**

*Laboratory Infection with Q Fever. E. G. Nauck and F. Weyer. —p. 198.
Diagnosis of Recessive Heredity. W. Weitz.—p. 202.
*Significance of Tuberculin Tests and of Roentgen Examination for Diagnosis and Prognosis of Tuberculosis in Childhood. K. H. Krohn. —p. 206.
Neurohormonal Regulation During Pregnancy and Significance of Sacral Autonomic Nervous System. K. Habbe.—p. 210.
Problem of Refertilization. H. Bosch.—p. 211.
"Arsphenamine Rheumatism" and Its Modification by Calcium Thiosulfate. F. Voss.—p. 212.

Laboratory Infection with Q Fever.—Nauck and Weyer say that in August 1947 there developed in their typhus laboratory a number of febrile attacks in which Rickettsia of the wolhynica type were demonstrated by means of the louse test. These cases were responsible for the fact that the first cases of laboratory infections with Q fever were mistaken for Wolhynic fever or typhus. The first case of Q fever appeared on November 6, but this case was identified as such only in retrospect. The first case in which the diagnosis of Q fever was established occurred on Nov. 21, 1947, and the last on Feb. 21, 1948. During this time 7 definitely verified cases occurred and 4 doubtful ones. The clinical aspects of these cases were the same as those reported in other laboratory epidemics. In 4 of the cases they verified the diagnosis by the demonstration of the causal organism following the introduction of blood into mice or guinea pigs, by transferring sputum to mice, by letting lice or ticks feed on patients or by inoculating mice with organ pulp. Even after the fever subsides the causal organism may still be present in the blood, but this could not be demonstrated in all of the patients. Verification of the diagnosis by complement fixation reaction was impossible, because the antigen supply was inadequate. The cases of Q fever appeared only after the strain of Q fever Rickettsia, which was maintained in lungs and spleens of mice, had passed through ticks. The specific source of infection is not known, but infection by dust containing the causal organism is most likely. Fluctuations in virulence may explain some of the peculiar epidemiologic aspects of Q fever. Since this report was completed 2 additional cases of laboratory infection with Q fever occurred. In these cases again infection by dust seemed most likely.

Tuberculin Test and Roentgen Examination in Tuberculous Children.—The manner in which the tuberculin test is used at present involves only a local reaction, which is all that is desired because the production of a focal reaction involves risks. In view of the population density and prevalence of tuberculosis now existing in Germany, more than 90 per cent of the adults have been infected with tubercle bacilli some time during their childhood. A positive reaction to a tuberculin test is therefore of little significance in adults. A positive reaction in a child signifies only that the child has had contact with the toxin of tuberculosis. The focus must be found, and after it has been established, various diagnostic procedures must be used in order to establish the biologic reactivity. Results of cutaneous tests must be evaluated with great caution. Intercurrent diseases, such as measles, scarlet fever, whooping cough and mumps, modify the allergic status and may cause a negative reaction. They may also stimulate the progression of the tuberculous process. Thus the cutaneous test may fail to disclose the true status at a time when the danger of progression or activation is especially serious. A diet low in protein decreases the antibody formation, and for this reason failures of cutaneous tests are particularly likely at present. In spite of these shortcomings, the cutaneous test is indispensable in the evaluation of the tuberculous process. The author demonstrates the value of roentgenologic studies in the course of tuberculosis. Roentgenoscopy detects hidden foci; roentgenograms are valuable records which permit comparisons at a later examination. The clinical interpretation of the roentgenologic observations in children must take account of the fact that exudative reactions predominate in children. The author discusses roentgenologic aspects of the forms of tuberculosis that are characteristic of childhood, particularly the primary complex and tuberculosis of the hilar region. Although there are other valuable methods of examination for tuberculosis in children, they are definitely less important than the combined use of tuberculin tests and roentgenoscopy in the diagnosis and prognosis of tuberculosis in children.

Wiener klinische Wochenschrift, Vienna

61:97-112 (Feb. 18) 1949

Introduction in Treatment of Tuberculosis of Larynx. A. I. Cemach. —p. 97.
*Embolectomy Performed on Abdominal Aorta. W. Dick.—p 99.
Contribution to Neurogenesis of Peptic Ulcer. L. P. Avancini.—p. 104.
*Blood Transfusion Syphilis. L. Arzt.—p. 105.

Embolectomy.—Dick treated 5 patients with embolism of the abdominal aorta at the bifurcation into the two iliac arteries by embolectomy. Two of these cases, 1 in a child aged 2½ years and the other in a woman aged 22, are reported in detail. The direct retroperitoneal approach was employed in all 5 cases. Lumbar anesthesia was used in the 4 adult patients, while a few drops of ether were sufficient in the case of the child. Treatment with methylene-dioxybenzyl-methyl-methylene-dioxyisoquinoline (eupaverin) was instituted in 3 of the author's cases before the surgical intervention, but was ineffective. Intravenous or transcutaneous, intra-aortal injections of eupaverin should be given nevertheless in all cases in which embolism of the aorta is suspected; it may be simulated by vascular spasm and in such a case the drug will be effective. Surgical intervention should not be postponed for more than one hour if definite improvement does not result from treatment with eupaverin. Embolectomy should be performed within the first six hours after the embolism when the intima of the vessel has not yet been impaired and when secondary thrombosis has not occurred. Twelve hours after the embolism sympathectomy and resection of the occluded portion of the vessel rather than embolectomy should be performed. In 2 of the author's cases heparin sodium injections were given immediately after the suture of the vessel: Disturbances of healing did not occur. Thrombosis threatens only for the first few hours after embolectomy and, therefore, heparin sodium, but not dicumarol,® is indicated.

Blood Transfusion Syphilis.—According to Arzt, the percentage of transmission of syphilis by blood transfusion is not known, but 1 infection per 4,000 cases may be admissible for certain countries in certain times. The process of infection with Treponema pallidum by transfusion differs from that by cutaneous route in that there is no filtration through the lymph nodes and in that the infective material is much more massive, considering the transfusion of 300 to 500 cc. of blood. The most dangerous donors are persons in the first incubation period, in the absence of any clinical symptoms and serologic proof. The right selection of the donor is the essential point in the problem of prevention of syphilis by blood transfusion. Persons with serologically latent syphilis should be rejected. Professional blood donors should be preferred to occasional donors among relatives of the patient. Professional donors are examined first on registration and have to undergo regular control examinations by a venereologist. Immediately preceding the transfusion a renewed clinical, and if possible serologic, examination, at least with a rapid reaction, should be made. Donors with serologically negative reactions who present symptoms from which syphilis may be expected and particularly donors with negative reactions with manifestations of any kind at the genitals should be rejected. The risk of transmission of syphilis may be reduced by the use of blood or serum treated with sodium citrate and preserved by refrigeration, instead of fresh blood; the donor of the blood which is to be preserved should be subjected to a Wassermann test.

Book Notices

Blood Transfusion. By Elmer L. deGowin, M.D., Associate Professor of Internal Medicine, State University of Iowa, Iowa City, Robert C. Hardin, M.D., Assistant Professor of Internal Medicine, State University of Iowa, Iowa City, and John B. Alsever, M.D., Senior Surgeon, United States Public Health Service. Cloth. Price, $9. Pp. 587, with 200 diagrammatic drawings. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C. 2, 1949.

Few fields of medical practice have expanded in recent years as rapidly and as successfully as transfusion of blood, plasma and their substitutes. The number of indications has increased tremendously, the danger of reactions has been reduced to a small fraction of what it was only ten or fifteen years ago. The qualifications of the three authors are attested to by the various positions held by them and by the long list of their contributions to the subject of the monograph.

The indications for the use of blood, plasma and substitutes, shock, the theory and practice of blood grouping (including the Rh factor, and of pretransfusion tests, the technic of transfusion of blood and plasma, the preparation of plasma, blood derivatives and plasma substitutes and the organization and management of a transfusion service and of blood banks are the subjects dealt with in 27 chapters. The lucidity of presentation of some of the most difficult subjects in medicine is admirable, as is the thorough and complete treatment. Ample bibliographic references are included in each chapter. The index is well organized. The book deserves widespread use by physicians, surgeons, clinical pathologists, blood bank directors and medical technologists.

The American Soldier: Adjustment During Army Life. Volume I. By Samuel A. Stouffer and others. Studies in Social Psychology in World War II. In Two Volumes. Cloth. Price, $7.50; $13.50 per set of 2 volumes. Pp. 599, with 17 charts. Princeton University Press, Princeton, N. J., 1949.

The American Soldier: Combat and Its Aftermath. Volume II. By Samuel A. Stouffer and others. Studies in Social Psychology in World War II. Cloth. Price, $7.50; $13.50 per set of 2 volumes. Pp. 675, with illustrations. Princeton University Press, Princeton, N. J.; Oxford University Press, Amen House, Warwick Sq., London, E.C. 4, 1949.

Tolstoy long ago wrote in his book War and Peace, "In Warfare the force of Armies is the product of the mass multiplied by something else, an unknown X." In an effort to determine this unknown factor, the Research Branch, Information and Education Division, United States Army, interviewed more than half a million soldiers during World War II. Never before had modern methods of social science been employed on so large a scale by such competent technicians. The Army exercised no control on the interpretations or conclusions expressed in these volumes, which are the sole responsibility of the authors in their capacity as civilian social scientists. A major purpose of the research staff was to provide a base of factual knowledge which would help the director of the Army Information and Education Division in his administrative and policy decisions.

The reliability of facts deduced from the interpretation of statistics depends on numerous variables; however, it would appear from the material presented by the authors that proper recognition of these variables and numerous cross checks have strengthened the validity of the statistical deductions. The mass of charts, figures and tables does not lend itself to rapid assimilation, and long periods of study are essential for a proper understanding of the contents.

Volume I, "Adjustment during Army Life," concerns itself primarily with the personal reaction of the soldier to his military environment. The soldiers' attitudes were analyzed in relation to variables such as age, level of education, marital status and color. The attitudes studied ranged from the soldier's reaction toward his superior officer through such analyses as job satisfaction, and other factors relative to his adjustment.

Volume II, "Combat and its Aftermath," studies the attitudes and aptitudes of the soldier in relation to combat. The authors show a definite correlation of precombat attitude with combat performance. Furthermore, according to their interpretation of collected statistics, the better educated men, those with the highest mechanical aptitude scores, the older men and the married men tend to get the better performance ratings in combat. Further studies include combat motivation, the control of fear in combat, problems of combat replacements, attitudes of ground combat troops toward rear echelons and the home front, problems of rotation and reconversion, and the point system for redeployment and discharge.

This work is primarily of importance to the National Military Establishments; nevertheless the information presented and the mechanics of collection of data developed should interest students of civilian social psychology. The many authors who were engaged in the assemblage of this material should receive a certain sense of gratification from the knowledge that this gigantic task will provide further impetus for a great advance in the social relations of man.

The Commonwealth Fund Thirtieth Annual Report for the Year Ending September 30, 1948. Paper. Pp. 48. Commonwealth Fund, Division of Publications, 41 E. 57th St., New York 22, 1949.

Entering on its thirtieth year devoted to doing something "for the welfare of mankind," the Commonwealth Fund reviews in its annual report the projects undertaken during the past year.

Most important of these projects is the attempt to better patient-physician relationships in cases involving mental health. By joining forces with medical schools to add psychiatrists to the teaching staffs, by giving fellowships to advanced workers dealing with mental cases and by making arrangements for interns to receive the feeling of general medical practice in rural hospitals, the Commonwealth Fund has been able to demonstrate to the physician the importance of realizing the mental situation of his patient.

Closely related to this medical education is the preventive service aiding mental health which is taught through lectures, clinical work and discussions. The stress here, too, is on personal attention in treatment. Field work is done on a county or state basis.

In addition to aiding rural hospitals build and equip, the fund supports the Council of Rochester Plan, begun in 1946. Small hospitals receive benefits in knowledge of organization and medicine from adjacent larger hospitals.

Other projects include three or four year grants for medical research and awarding of twenty-eight fellowships, now given under less limiting requirements for eligibility. The ten books and pamphlets published are also listed, and the report closes with a balance sheet of the Commonwealth Fund and a list of the appropriations voted during 1947-1948.

A Treatise on Obstetric Labor. By Richard Torpin, M.D., Professor and Chairman of the Department of Obstetrics and Gynecology, University of Georgia School of Medicine, Augusta, Georgia. Chapter on Erythroblastosis Fetalis and the Rh Factor. By Edith L. Potter, M.D., and Philip Levine, M.D. Cloth. Price, $7. Pp. 590, with 185 illustrations. Augusta Obst. and Gyn. Book Co., Box 2038, Hill Branch, Augusta, Ga., 1948.

The book was prepared for physicians and obstetricians. The opening chapter is called Test of Labor. The sequence of chapters is surprising in that the chapter on amnesia, analgesia and anesthesia follows a discussion of the pelvis, and in this chapter alone 118 articles are quoted. Much of the book is supplied by quotations from other authors or from previous publications. In the section on rural obstetrics, the idea of early ambulation is supported.

In the chapter dealing with forceps delivery, some of the reproductions are poor. The illustrations on postpartum hemorrhage are meritorious. Immediately after this chapter there is one dealing exclusively with the retained placenta.

Chapter XIV is a reprint from THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION dealing with the influence of the placenta on the fetal presentation. In the chapter on placenta previa, the drawings do not reveal placenta previa, and thus the insertion of the bag fails to illustrate the effect of the tampon.

In the treatment of abortion (page 299), he states, "scraping or curetting of the uterine lining is not necessary and is dangerous. . . ."

The advice on care of the intrauterine dead fetus is good. The discussion on puerperal sepsis seems incomplete. On page

484, the statement reads, "The lower uterine segment operation is relatively safely done on a patient who has been in labor even several days if there have been no vaginal examinations, and if regular intravaginal anti-septics have been used, due attention having been paid to prevention of anemia, dehydration and discomfort of the patient."

Just before the index there are 73 case reports.

This is obviously a book of subjects which does not completely span the entire field of obstetrics but with irregularity and imbalance in the degree of interest. The bibliography is impressive.

Practical Aspects of Thyroid Disease. By George Crile, Jr., M.D., F.A.C.S., Department of Surgery, Cleveland Clinic, Cleveland, Ohio. Cloth. Price, $6. Pp. 355, with 101 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C. 2, 1949.

According to the preface the author's conclusions are based on his experience in the surgical treatment of 1,000 patients with diseases of the thyroid plus observations of several hundred patients with hyperthyroidism treated with antithyroid drugs by one of his colleagues. Most thyroid diseases have moved from the domain of the surgeon to general practice. As a consequence both internists and surgeons will need to familiarize themselves with the recent developments in the diagnosis and treatment of diseases of the thyroid and to cooperate more closely than heretofore.

The book has 27 chapters, 1 of which is devoted to the anatomy and 1 to the physiology of the thyroid. One is devoted to a discussion of the diagnosis of hyperthyroidism. The author's opinion of the value of blood iodine determinations will be comforting to the many clinicians who do not have access to facilities for this test. He points out that the test is difficult and expensive and says that the results are too irregular and inconsistent to be of clinical value.

The chapter devoted to "Anti-Thyroid Drugs in the Treatment of Hyperthyroidism" is particularly good, as is the chapter on "Roentgenotherapy and Radioactive Iodine in the Treatment of Hyperthyroidism." Eight chapters are devoted to various aspects of the surgical treatment of hyperthyroidism.

A.T. 10 (dihydrotachysterol), which is esteemed highly by many men in the treatment of hypoparathyroidism, is viewed with suspicion by the author, who feels that its use entails some danger by its cumulative effect in raising the serum calcium to toxic levels. He favors the use of vitamin D in doses of 50,000 to 300,000 units daily. He could have made the discussion of cretinism and mongolism more helpful by enumerating the five characteristics of mongolism not seen in cretinism. The bibliography is well chosen and sufficiently extensive.

Erkennung und Behandlung der organischen Lösungsmittelvergiftungen. Von Dr. Med. Franz Borbely, Chefarzt des Fabrikkrankenhauses der Manfred Weiss Stahl- und Metallwerke A.-G. Budapest. Geleitwort von Prof. Dr. Fritz Schwarz, Direktor des Gerichtlich-Medizinischen Instituts der Universität Zürich. Paper. Price, 13.80 Swiss francs. Pp. 168. [Sole distributors for the U. S. A. and Canada: Grune & Stratton, Inc., 381 Fourth Ave., New York.] Hans Huber, Marktgasse 9, Bern, 1946.

Clinical aspects of acute and chronic poisoning by the common industrial solvents are stressed in this monograph. About 20 pages are devoted to the clinical symptoms and syndromes of poisoning by solvents in general and about 100 pages to individual solvents, for each of which is given its nonspecific and specific actions; the clinical course, diagnosis, prophylaxis and therapy of poisoning by the solvent; and a short bibliography, chiefly of European publications. The solvents covered are: aliphatic hydrocarbons; methyl, ethyl, propyl, butyl and amyl alcohols; dioxane; aldehydes and ketones, especially acetone; ethers, especially diethylether; formates and acetates; dimethyl sulfate; fifteen common aliphatic chlorinated hydrocarbons; carbon disulfide; aromatic hydrocarbons, alcohols, esters, acids and chlorine compounds; cyclohexane and related hydrocarbons, and terpenes. The first part of the book acquaints the doctor with the names of solvents commonly used for: extracting fats and formulating protective coatings, rubber compounds and plastics, for heat exchange mediums, fuels, explosives, fire extinguishers, etc. Typical accidents causing acute poisoning are described. Because the average workman often does not know the chemical nature of solvents to which he is exposed, because solvents often are marketed under fanciful names and because differential diagnosis of solvent poisoning is difficult, the doctor is advised to secure samples of solvents when poisoning is suspected. A little information is given on the qualitative analysis of such samples. The book is written in simple German, and is well organized and indexed.

School Health Education: A Textbook for Teachers, Nurses and Other Professional Personnel. By Delbert Oberteuffer, Ph.D. Harper's Series in School and Public Health Education, Physical Education, and Recreation. Delbert Oberteuffer, Editor. Cloth. Price, $3.25. Pp. 405. Harper & Brothers, 49 E. 33d St., New York 16, 1949.

This book is a text for the preparation and in-service education of teachers and administrators and other personnel in school health education. The major portion of the material is devoted to school health education procedures and policies, but considerable attention is given in the third section of the book to the health service activities, including healthful school living. Emphasis is placed on methods and practices which have proved successful in actual school situations. Specific health problems confronting the schools are described and the role of effective health education in solving these problems is outlined. The task of the schools in health education is defined as revealing the facts and meanings of the work of the scientist and placing appropriate interpretations and applications on them. How this objective, with stress on bringing about desirable health behavior, can be accomplished through direct teaching, correlation and integration of health in the curriculum is presented in considerable detail. Suggestions as to methods and procedures for organization and evaluation of instruction are also made.

Physicians will be interested in the attention given to the necessity for one's developing critical thinking through health education about scientific health services as compared to spurious healing cults and "patent medicines and cures." Suggestions as to the reciprocal relations which can exist between the school health program and physicians, dentists and their professional societies are made.

Investigations on Agonal Acidosis. By Ib Fabricius Hansen. Edited by Geoffrey Walker, B.Sc. Translated by Hans Andersen, M.D. Paper. Pp. 135, with 15 illustrations. Stechert-Hafner, Inc., 31 E. 10th St., New York 3; Povl Branners Forlag A/S, St. Kongensgade 29, Copenhagen, 1948.

This monograph on the chemical changes in the blood during the agonal state was completed shortly before death prematurely terminated the promising career of the author. It contains the most detailed studies with which the reviewer is acquainted on the chemical composition of the blood during the transition from life to death. Following introductory sections on previous work on agonal acidosis, the clinical aspects of the preterminal state and the concept of acidosis, there is a description of the material and analytic methods used. The results are presented in great detail, with tabular summaries. Twenty-three chemical and physiochemical measurements were carried out on almost all the 38 subjects studied. Unfortunately, sodium and potassium determinations were not done. There is a short section on therapy.

Hansen found a fall in blood p_H usual in the agonal state. In 18 of the cases values of less than 7.10 were found. The lowest premortal p_H was 6.80. Since the p_H was below 7.00, the lower limit generally regarded as compatible with life, in one third of the patients, it seems likely that in some the acidosis was the direct cause of death. The acidosis was most often of the mixed type, with both metabolic and respiratory components. In contrast to p_H, plasma bicarbonate is reduced in only about a third of the cases; the carbon dioxide tension is often increased. The lactic acid content of the blood is augmented in the agonal state. Hansen found no correlation between the cause of death and the severity of the acidosis, but the observations indicated that the fall in p_H is directly proportional to the final period of unconsciousness. The therapeutic value of drugs increasing the irritability of the respiratory center, oxygen, and the intravenous administration of 1.3 per cent solution of sodium bicarbonate are briefly discussed.

The mass of data on the chemical state of the blood in the agonal state should interest workers in various clinical and biochemical fields.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

ARTHRITIS AND BEER DRINKING

To the Editor:—**Does drinking beer cause arthritis or arthralgia? Is this true arthritis or an allergic response?**

M.D., Texas.

[This inquiry was referred to two authorities, whose respective replies follow.—ED.]

ANSWER.—Certain evidence that beer drinking causes arthritis or arthralgia is lacking. On theoretic grounds one may assume that it is possible to be allergic to one or more ingredients of beer, and that on these grounds an allergic arthritis might follow its consumption. Such a situation must be rare, however, if it occurs at all. Even in gout, there is lack of evidence that the intake of beer has a detrimental effect on the disease.

ANSWER.—Drinking beer is not known to cause arthritis. Patients with gout may have attacks of acute gouty arthritis more frequently if indulging in beer or other alcoholic beverages. Though the cause of gout is unknown, alcoholic beverages, per se, are not thought to be a primary etiologic factor.

Presumably, allergy to malt might be manifested by use of beverages, such as beer, in which malt is a basic constituent, but in such an instance allergic manifestations to malt in other forms also would be demonstrable.

RESEARCH ON IMMORTALITY

To the Editor:—**Since a recent newspaper story about Dr. Rhine of Duke University, I have had a number of questions asked that I cannot answer and I should appreciate information about them. The story was in reference to his belief that the immortality of the soul could be proved by science, and also referred to his work on mental telepathy. I should also like your answer to the following questions: 1. What is the present accepted scientific status as to mental telepathy, spiritualism and one's control of dice and cards, as Dr. Rhine describes? 2. Is there any other scientific research under way at the present time regarding these questions? 3. Is there any research now going on as to the immortality of the soul? Please describe.**

M.D., Tennessee.

ANSWER.—The Association for Research in Nervous and Mental Diseases, which includes leading neurologists and psychiatrists of America, has been considering a scientific study of extrasensory perception. Most of these specialists felt that the data that had been accumulated should be evaluated scientifically. The subject may be reviewed at a forthcoming meeting. Many members not only expressed an interest in the subject but stated that they had observed psychologic phenomena which might be classed as extrasensory perception or mental telepathy.

With the perfection of the electroencephalogram, demonstration can be made that the brain does send out electrical impulses which can be recorded. These waves, at present, can be used only in the process of diagnosis and can be defined as either pathologic or normal. Possibly the specific waves can be more definitely interpreted. Theoretically, such waves might be considered an indication of thought transmission. At present, means do not exist for recording thought waves visually.

The immortality of the soul is considered a philosophic problem and is dependent on the definition of the soul.

As J. B. Rhine states, in man's attempt to make clear to himself his position in the universe, he has created various religions, and with the development of culture many speculative philosophies have been concocted out of untested logic. With the advent of science, ways of finding out the truth have been devised. This does not necessarily mean that man's conception of the Infinite will be proved incorrect. It is only by the understanding of man himself that the soul can be understood.

[The questions were also referred to Dr. J. B. Rhine, who replies:]

ANSWER.—1. There is a fairly respectable amount of acceptance of telepathy among scientists, and this is noticeably growing. There is no scientific acceptance of spiritualism worthy of attention. An occasional scientist has expressed acceptance of the claims of the spiritualists, but I know of no one living today who does. The control of dice by direct mental influence has been called psychokinesis. This effect has been demonstrated in our laboratory experiments repeatedly. It is still, however, a new finding and has not received wide recognition as yet.

2. Scientific research regarding these questions is under way at present. The principal research center is the Parapsychology Laboratory at Duke University. Next in amount of activity is the Department of Psychology, City College of New York, which works in conjunction with the American Society for Psychical Research. Work by individuals is going on, however, in many colleges and universities over the country, but only in a minor, part time fashion.

3. With respect to research as to the immortality of the soul, only preliminary studies for the purpose of developing suitable methods are being carried out. This is going on at Duke University.

RABIES VACCINE PARALYSIS

To the Editor:—**A woman aged 22 was bitten by a rabid dog six weeks ago, at which time she was in perfect health. She was at once started on antirabies treatment with vaccine approved by the Kentucky State Board of Health. The doctor was giving this each day and in alternate arms. The eleventh dose came in the right arm; two hours after the injection the patient was seized with severe pain in the right shoulder, and some two hours later was completely paralyzed from the neck down. This lasted for several days but did not involve the muscles of deglutition or respiration enough to embarrass the patient. After two weeks she regained sensation of the body from the umbilicus up, and also motion and reflexes. Five weeks after the inception of the paralysis she had no action of the bladder or bowel. She had a catheter in the bladder and did not know when the bowel should move. Reflexes were absent from the umbilicus down. This patient had chronic headache. She had frequent and rather severe attacks. I started treatment with sodium iodide. The patient's reaction to histamine was highly positive. What can be expected as to recovery? Will other treatment be more successful?**

A. David Willmoth, M.D., Louisville, Ky.

ANSWER.—Occasionally, in a patient who is receiving active treatment for rabies with an attenuated form of rabies vaccine, encephalomyelitis develops. This disease may take on one of three forms: (1) paralysis of a type found in rabies; (2) myelitis of either cervical, thoracic or lumbar regions, or (3) polyneuritis with facial paralysis. Why this disease develops during the treatment is not fully understood. The fact that an attenuated form of rabies vaccine is used in the therapy strongly suggests an attenuated form of hydrophobia. Some authors are inclined to believe that the vaccine used releases another virus, akin to that in rabies, because the clinical picture resulting is like that seen in hydrophobia. There is no scientific treatment for antirabic encephalomyelitis. At best any therapy is purely or entirely symptomatic. The outcome is usually or frequently disastrous in that the patient may die. When this does not occur the patient may recover with only a small amount of residual effects. On occasions, however, the paralysis may become permanent. Certainly all injections of vaccine should be stopped once this antirabic picture develops. Despite the fact that encephalomyelitis may follow injections of antirabic vaccine it is strongly suggested that whenever a case of rabies presents itself and one is sure that the biting culprit has hydrophobia, antirabic vaccine therapy should be started at once.

RABIES VACCINE AND RAT BITES

To the Editor:—**As health officer, I am frequently presented with the problem of whether or not to give rabies vaccine following rat bites. There is considerable difference in opinion among health officers, epidemiologists and veterinarians as to whether or not this prophylactic measure should be used. In the East St. Louis area, we have not had a reported positive dog head in almost two years. In the past, my policy has been to give rabies vaccine to all rat bite patients referred by their family physicians for such treatment. In many cases, especially in small babies, I have been reluctant to do so, but I would not desist because of legal complications. Recently, a physician called concerning this matter. A child had been bitten on the finger by a rat. I told him that the danger of complications in the indescriminate use of rabies vaccine must be weighed against the possibility of rabies resulting from a rat bite. I feel the chances of rabies developing in this instance are less. Is my reasoning sound?**

C. F. Leonard, M.D., East St. Louis, Ill.

[This inquiry was referred to two authorities, whose respective replies follow.—ED.]

ANSWER.—As rat bites do not cause rabies there is no reason for using rabies vaccine in such cases. It is well known that rabies vaccine by itself in some cases may cause undesirable reactions.

ANSWER.—Rats are susceptible to rabies and theoretically constitute a possible reservoir and source of infection for man. Actual experience in this country has shown that the num-

ber of rats proved to be infected with rabies has been minimal. In advising physicians concerning rabies immunization after rat bites, the same criteria should be applied as applies to bites of any other animals, such as dogs; namely, if the biting rat is caught and can be observed, vaccine may be withheld as long as the rat does not show symptoms of rabies within a period of two weeks' observation. If the rat gets away or even if apprehended and the bite has been particularly severe, in a geographic area where there is known to be an active reservoir of rabies in other animals, then it would seem necessary to go ahead and immunize on the possibility that the biting rat may have had rabies infection. You are correct in weighing the possibilities of a patient's having a serious reaction to the rabies vaccine against the chances of the person's having actually been exposed to rabies.

PREVENTING BRUCELLOSIS

To the Editor:—I am making a special study of brucellosis for this community and would like an official statement regarding specific measures recommended for control and eventual abolition of this disease.

John J. Clancy, M.D., Hartford, Conn.

ANSWER.—The control and eventual eradication of brucellosis is dependent on available epidemiologic knowledge of the disease. The reservoir of brucellosis is in domestic animals, especially cattle, hogs and goats. The disease is not transmitted from human being to human being except under extremely rare conditions, such as the establishment of an infection in utero or the transmission of Brucella to a nursing infant through the milk of an infected mother. Brucella organisms are shed in the milk of infected cattle and goats, and, therefore, the disease is contracted by human beings through the ingestion of raw milk or products of milk such as cheese and butter prepared from unpasteurized milk. One method of controlling the disease in human beings, then, is to have all milk pasteurized for human consumption. A second method of contracting the disease is through dermal contact with infected material such as animal tissues, secretions and excretions. In this manner, the disease is occupational and may affect farmers, livestock producers, meat-packing plant employees and veterinarians. There are no practical procedures for preventing brucellosis in human beings under these conditions except by eradicating the disease at its source. The disease can be eliminated in cattle by vaccination of calves and by eradicating from a herd animals which have positive agglutination reactions. The eradication of brucellosis in swine poses a more difficult problem in that the blood test is not so reliable in this species. Brucellosis in goats constitutes a problem in some sections of the country, particularly the Southwestern states.

ULTRAVIOLET LIGHT IN INDUSTRY

To the Editor:—A manufacturer of electric sheets asks whether there would be any harm in the use of mercury vapor, 100 watts, Westinghouse or Hanovia ultraviolet lamps. Lines have to be made on the sheets to guide the workers sewing on the electric wire. These lines often show. He has an ink which is visible only in ultraviolet light. What, if any, harmful effects would there be to the skin or body of a worker exposed to this light, even though exposure is only to hands, eight hours a day, 40 hours a week?

M. J. Frank, M.D., Beacon, N. Y.

ANSWER.—Therapeutic ultraviolet lamps are not suited for the purpose mentioned. Other types emit rays of such Angstrom length as largely to avoid any significant damage to the skin or eyes. Among others, Hanovia, General Electric and Westinghouse manufacture such lamps in various sizes and with as low a watt consumption as 10. It is possible that long exposure may lead to skin pigmentation but without erythema. Likewise, the need may arise for the wearing of a light eye shield or goggles. With properly chosen lamps, the real physiologic problem is not related to ultraviolet damage but to eye strain. The types of lamps mentioned emit little visible light and properly are termed "black light lamps." Since fluorescence best shows up in darkness, a visual problem arises from the lack of proper illumination. However, suitable arrangement may be devised so that adequate general lighting may exist, together with sharply localized ultraviolet light such as will sufficiently activate the phosphor. Since the number of fluorescing substances is high, the choices should be such as to provide fluorescence even when visible light is nearby. In general, it is the intent to state that with proper choice of lamps this sewing operation may be carried out without the prospect of any significant harmful action on skin or eyes.

ANATOMIC ASYMMETRY

To the Editor:—The question recently arose in a consultation on an industrial case as to whether the measurements of the left leg were larger than the right leg in a perfectly normal person without any antecedent disease in the legs. Please supply information on this question.

David C. James, M.D., Phoenix, Ariz.

ANSWER.—The question of bilateral asymmetry of the human body has been reviewed by George Halperin in an article published in the *Archives of Internal Medicine* (**48**:676-682, 1931). It appears that as a result of exact measurements taken from a great number of cadavers and living subjects it has been established that the two halves of the body in the human species are never symmetric. Among other asymmetries it is an accepted fact that the left leg is more often longer and stronger than the right. That is probably the reason why soldiers begin their marching with the left leg and why jumpers usually employ the left leg for a kickoff. Cox (Cox, W. C.: On the Want of Asymmetry in the Length of Opposite Sides of Persons Who Have Never Been the Subject of Disease or Injury to Their Lower Extremities, *Am. J. M. Sc.* **69**:438, 1875) found that in living subjects the difference in the length of the lower extremities amounted to ⅛ to ⅞ inch (0.32 to 2.23 cm.) and that the left extremity was more often the longest.

INTRADERMAL TYPHOID IMMUNIZATION

To the Editor:—I would like to know the number of intradermal typhoid vaccine injections (0.1 cc.) that are equivalent to the routine immunization of three subcutaneous injections. Also, what is the interval between the intradermal injections?

J. B. Taylor, M.D., Carbondale, Ill.

ANSWER.—Two recommendations, which vary somewhat, have been made for typhoid immunization by means of intracutaneous injections of antityphoid vaccine. The first of these calls for four intracutaneous injections as follows: 0.05, 0.1, 0.15 and 0.2 cc. The second method consists of only three injections of 0.1 cc. each. It is claimed that the latter dosage affords satisfactory protection. With either procedure, the interval between injections is one week. It is likely that a better antigenic response can be accomplished if injections are made two weeks apart.

ALCOHOL INTOLERANCE

To the Editor:—In Queries and Minor Notes, The Journal, March 26, page 896, the statement that alcohol intolerance may be a sign of developing delirium tremens or Korsacow's syndrome is somewhat unsatisfying. I have seen this symptom of a developing intolerance to alcohol often in formerly moderate or heavy drinkers and these were definitely not in the early stages of an alcoholic psychosis. On the contrary, I have regarded the symptom on the basis of the known dynamics of the cases as a functional symptom, the purpose of which is to protect the patient from a growing sense of dependence on alcohol. In cases I have observed the symptom took place as one of the incipient personality changes in the development of a neurosis. I would be glad to hear whether any of your readers have noticed this phenomenon, as I do not recall ever seeing it in the literature. The development of an alcohol intolerance has been mentioned as occurring in soldiers with brain injury as a result of blast and has even been offered as a differential diagnostic sign to distinguish this from the ordinary combat traumatic neurosis. However, I do not believe that this is so, as I have seen the symptom too often in psychoneurotic persons who showed no history or symptoms of injury. I agree with your authority that such a patient is lucky that the "bell tinkles before it tolls."

R. E. Peck, M.D., Brooklyn.

WARTS

To the Editor:—Please refer to Queries and Minor Notes, The Journal of February 26, page 615, under the heading "Warts."

In the "long list of remedies recommended for the treatment of warts," dosage with vitamin A, 100,000 units per day for six to twelve weeks, should be mentioned. In the particular case cited a thorough trial of vitamin A therapy is indicated. In many such cases the results have been spectacularly good.

Being a radiologist, I have for many years been interested in a study of the deleterious influence of irradiation on tissue, and I feel that anything which tends to make roentgen or radium therapy unnecessary, especially in benign conditions and when the patient is young, deserves a great deal of emphasis. Irradiation of warts has caused harm in some persons, and even where the harm is not visible to the casual observer it is nevertheless present in a form which can be visualized histologically. In 60 to 80 per cent of all cases, warts disappear as a result of the ingestion of 100,000 units of vitamin A per day.

W. Edward Chamberlain, M.D., Philadelphia.